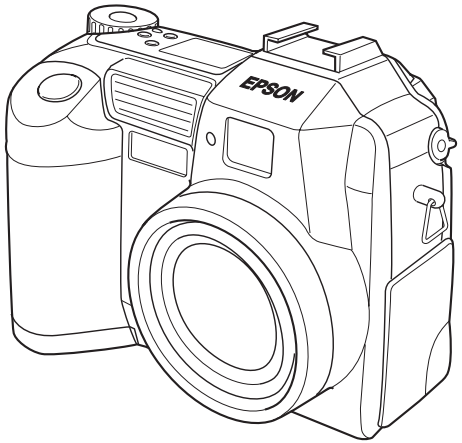
SERVICE MANUAL



Digital Still Camera

EPSON PhotoPC 3100Z

COLOR IMAGING EPSON

EPSON®

SEDC00003

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PRECAUTIONS

Precautionary notations throughout the text are categorized relative to 1)Personal injury and 2) damage to equipment.

DANGER Signals a precaution which, if ignored, could result in serious or fatal personal injury. Great caution should be exercised in performing procedures preceded by DANGER Headings.

WARNING Signals a precaution which, if ignored, could result in damage to equipment.

The precautionary measures itemized below should always be observed when performing repair/maintenance procedures.

DANGER

1. ALWAYS DISCONNECT THE PRODUCT FROM THE POWER SOURCE AND PERIPHERAL DEVICES PERFORMING ANY MAINTENANCE OR REPAIR PROCEDURES.
2. NO WORK SHOULD BE PERFORMED ON THE UNIT BY PERSONS UNFAMILIAR WITH BASIC SAFETY MEASURES AS DICTATED FOR ALL ELECTRONICS TECHNICIANS IN THEIR LINE OF WORK.
3. WHEN PERFORMING TESTING AS DICTATED WITHIN THIS MANUAL, DO NOT CONNECT THE UNIT TO A POWER SOURCE UNTIL INSTRUCTED TO DO SO. WHEN THE POWER SUPPLY CABLE MUST BE CONNECTED, USE EXTREME CAUTION IN WORKING ON POWER SUPPLY AND OTHER ELECTRONIC COMPONENTS.
4. WHEN DISASSEMBLING OR ASSEMBLING A PRODUCT, MAKE SURE TO WEAR GLOVES TO AVOID INJURIER FROM METAL PARTS WITH SHARP EDGES.

WARNING

1. REPAIRS ON EPSON PRODUCT SHOULD BE PERFORMED ONLY BY AN EPSON CERTIFIED REPAIR TECHNICIAN.
2. MAKE CERTAIN THAT THE SOURCE VOLTAGES IS THE SAME AS THE RATED VOLTAGE, LISTED ON THE SERIAL NUMBER/RATING PLATE. IF THE EPSON PRODUCT HAS A PRIMARY AC RATING DIFFERENT FROM AVAILABLE POWER SOURCE, DO NOT CONNECT IT TO THE POWER SOURCE.
3. ALWAYS VERIFY THAT THE EPSON PRODUCT HAS BEEN DISCONNECTED FROM THE POWER SOURCE BEFORE REMOVING OR REPLACING PRINTED CIRCUIT BOARDS AND/OR INDIVIDUAL CHIPS.
4. IN ORDER TO PROTECT SENSITIVE MICROPROCESSORS AND CIRCUITRY, USE STATIC DISCHARGE EQUIPMENT, SUCH AS ANTI-STATIC WRIST STRAPS, WHEN ACCESSING INTERNAL COMPONENTS.
5. DO NOT REPLACE IMPERFECTLY FUNCTIONING COMPONENTS WITH COMPONENTS WHICH ARE NOT MANUFACTURED BY EPSON. IF SECOND SOURCE IC OR OTHER COMPONENTS WHICH HAVE NOT BEEN APPROVED ARE USED, THEY COULD CAUSE DAMAGE TO THE EPSON PRODUCT, OR COULD VOID THE WARRANTY OFFERED BY EPSON.

About This Manual

This manual describes basic functions, theory of electrical and mechanical operations, maintenance and repair procedures of the printer. The instructions and procedures included herein are intended for the experienced repair technicians, and attention should be given to the precautions on the preceding page.

Manual Configuration

This manual consists of six chapters and Appendix.

CHAPTER 1. PRODUCT DESCRIPTIONS
Provides a general overview and specifications of the product.

CHAPTER 2. OPERATING PRINCIPLES
Describes the theory of electrical and mechanical operations of the product.

CHAPTER 3. TROUBLESHOOTING
Describes the step-by-step procedures for the troubleshooting.

CHAPTER 4. DISASSEMBLY / ASSEMBLY
Describes the step-by-step procedures for disassembling and assembling the product.

CHAPTER 5. ADJUSTMENT
Provides Epson-approved methods for adjustment.

CHAPTER 6. MAINTENANCE
Provides preventive maintenance procedures and the lists of Epson-approved lubricants and adhesives required for servicing the product.

APPENDIX Provides the following additional information for reference:

- Connector pin assignments
- Electric circuit boards components layout
- Electrical circuit boards schematics
- Exploded diagram & Parts List

Symbols Used in this Manual

Various symbols are used throughout this manual either to provide additional information on a specific topic or to warn of possible danger present during a procedure or an action. Be aware of all symbols when they are used, and always read NOTE, CAUTION, or WARNING messages.

Indicates an operating or maintenance procedure, practice or condition that is necessary to keep the product's quality.

Indicates an operating or maintenance procedure, practice, or condition that, if not strictly observed, could result in damage to, or destruction of, equipment.

May indicate an operating or maintenance procedure, practice or condition that is necessary to accomplish a task efficiently. It may also provide additional information that is related to a specific subject, or comment on the results achieved through a previous action.

I.ndicates an operating or maintenance procedure, practice or condition that, if not strictly observed, could result in injury or loss of life.

Indicates that a particular task must be carried out according to a certain standard after disassembly and before re-assembly, otherwise the quality of the components in question may be adversely affected.

Revision Status

Revision	Issued Date	Description
A	April 12, 2001	First Release
B	July 17,2003	"AWB Adjustment" on page -86 : Add the CAUTION "Firmware Upload" on page -95 : error correction in CAUTION "Firmware Upload By CF Card" on page -96: Add the new method “Re-installing the Expanded Functions“ on PAge -96: Delete the section.

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CHAPTER

1

PRODUCT DESCRIPTION

1.1 Features

Major features of EPSON PhotoPC 3100Z are as follows.

- High Picture Quality
  - 3.34 Mega pixel color CCD
  - Hypict output equivalent to 4.84 Mega pixels
  - Sophisticated image processing technology
  - Enrich shooting function (manual / program) reflects the intention of the photographer.
  - EPSON Color Space is supported.
  - PIM (Print Image Matching) is supported.
- Full equipment
  - Collapsible optical 3 times zoom lens and optical view finder
  - Hot shoe and built-in flash (Auto, Red eye reduction, Flash compulsion, Flash prohibition, Flash slow synchro)
  - 1.8-inch wide view LCD
  - 16MB Compact Flash card (Standard attachment)
  - Microphone and speaker
  - USB, Serial I/F and AV output terminal
- High-speed performance
  - Improve the camera-starting time.
  - Simple playback feature allows easily to view the images without having to turn the dial switch.
  - QVGA images are indicated on LCD monitor by play-back mode, and image-scroll become quickly.
  - Shutter-lag is improved by VF mode.
- Abundant shooting modes
  - Full Auto shooting.
  - Program shooting. (Normal, Landscape, Portrait, Sports)
  - Manual shooting (Full Auto, Aperture priority auto, Shutter speed priority auto, Full Manual)
  - Exposure adjustment, ISO sensitivity change and White Balance (Auto, Fix, Custom) .
  - Continuous shooting, Interval shooting, Seamless Digital zoom, Macro, and Monochrome mode.
  - Switching function.
- Video recording supported
  - Using Quick Time format 3.0 or later (Motion JPEG), you can take and play moving films.
  - It is possible to Video Clip shooting and Playback.
  - Max. 25 seconds continuous shooting when taking 15 frame /sec. (Suppose 1 frame is taken by 320 x 240 pixels)
  - Synchronous sound recording and playback are available.
  - 2x Seamless Digital zoom.
  - Raise a compression ratio (reduced the file size).
- Appearance
  - Metal body gives a high-class impression.
  - High performance and compact size.
  - DPOF button is implemented.
- Compliant to the industry standard
  - DCF format
  - DPOF 1.10 (DPOF file creation function) is supported.
- Exclusive software
  - CP-920Z USB storage driver
  - EPSON Photo!4
  - EPSON File Convertter
    Covers the image on PC to EPSON DCF file.
  - EPSON Photo! Quicker

- Panorama Boutique Light EP (for stitching process)
- Card monitor

☐ User I/F
- GUI is further improved from Photo PC3000Z.
- Easy to understand and easy to use.

☐ External I/F
- USB
- Video output (NTSC/PAL can be switched by menu.)
- Hot shoe (for the connection with the external flash).

☐ Print mark function
- Whenever DPOF-setting is possible by DPOF-button.
- Printon and FDI service supported
- Creates DPOF file.
- Image select, image print-number selection, and index On/OFF.
- Print setting function (Print Image Matching)

1.1.1 Exterior View

WEIGHT AND DIMENSION

☐ Dimension: 108mm x 89 x 65mm
(without some parts of protrusions.)

☐ Weight: 358g (body only)

☐ Tripod mounting holes: JIS B7103 1/4 compliant

APPEARANCE

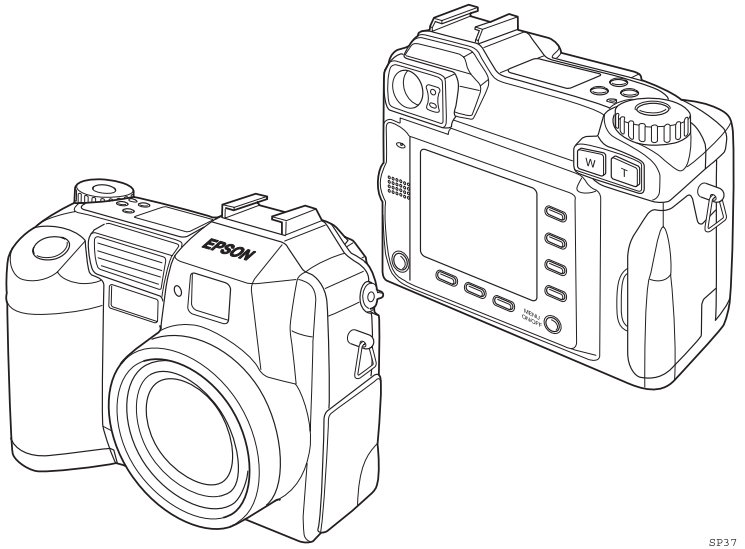


Figure 1-1. Exterior View

1.2 Functional Specification

Basic specifications of PhotoPC 3100Z is as follows.

1.2.1 Image Data

- Data Type: Compression: DCF (Exif)
  (DCF = Design rule for camera file system)
  Not compressed: DCF expansion (Tiff)
- Thumbnail Image: 160 x 120 pixels
- Image Size: 2544 x 1904 pixels (★★★H HyPict)
  2048 x 1936 pixels (★★★ Super Fine/ ★★ Fine)
  640 x 480 pixels (★ Standard)
- Color: Full color (24bit full color)/ Monochrome

1.2.2 Optics

- CCD: 1/1.8 inch color area CCD, inter race reading, complementary color filter
  Total pixels: 3.34 Mega pixels (2140 x 1560)
  Effective pixels: 3.24 Mega pixels (2088 x 1550)
- Lens: Collapsible 3 times zoom lens
  f=7-21mm
  (equivalent to a 34-102mm lens on a 35 mm camera)
  Brightness: F2.0 (W) - F2.5 (T)
  7 elements in 9 groups (2 aspheric surface lenses)
  *How to control collapsible lens is referred to the description See "Sinking Lens Control" on page -25.
- Aperture: F2.0, F2.3, F2.8, F4.0, F5.6, F8.0 (6 apertures in total)
- Viewfinder: Real-image optical finder (view range about 83%)
  AF target mark indicates a targeting are for focusing.
  Visibility adjustment.
  No macro frame.
- Focus: Auto focus / Manual focus
  Focus accuracy is further improved from Photo PC3000Z.
- Focusing range: 0.2-0.5m (Macro mode)
  Provided; 0.06-0.5m at the wide most range.
- Shutter: Electric iris with mechanical shutter
  - When flash mode is auto or compulsion: 1/30 to 1/1000* second
  - When using an external flash: 1/30 to 1/1000* second (only at Aperture priority mode)
  - When flash mode is slow sync.: 1/2 second to 1/1000* second
  - When flash mode is off: 1/2 -1/1000* sec

NOTE: ** When the aperture is F2 and F2.3, shutter speed is up to 1/500 sec.*
When F2.8, it is up to 1/600 sec.
When F4 and F5.6, up to 1/750.
When F8, up to 1/1000.

If shooting a subject of low contrast or low brightness, the auto focus may not work properly. When the auto focus does not work properly (the distance metering is not performed), the camera automatically focuses to 1.5 m in a dark place and to the infinity in other cases.

1.2.3 Shooting Mode

- Exposure adjustment
  - Polytomy photometry programmed AE
    (Aperture and shutter speed are variable.)
  - Spot measuring programmed AE
    (Aperture and shutter speed are variable.)
  - Manual adjustment available
    (-2EV to +2EV, 0.5EV/0.2EV step)
- Sensitivity:
  - ISO 100 equivalent (at Normal mode)
  - ISO 200/400 equivalent High sensitivity shooting mode available

- White balance
  - TTL auto white balance
  - Fixed mode available
    (only under the sun light, color temperature: 5200K)
  - User record setting mode available
- LCD shooting
  - TTL image play (Playback rate 1/30 sec, in dark condition: 1/10 sec)
  - A visual field covers more than 98% of a capturing image field.
- Finder shooting
  Press MENU button (at shooting, at waiting).
  Unlike previous models, PhotoPC 3100Z indicates menu on LCD if MENU button is pressed at shooting.
  This new function allows user to check and change current settings.

NOTE 1: *The through image will not be displayed on LCD (it will be blue black) and thereby, macro and digital zoom shooting are not available since they requires framing check.*

NOTE 2: *LCD will be automatically turned off 15 seconds after the last button operation. LCD will also be turned off when MENU button is pressed again or when the half shutter is used.*

NOTE 3: *Shutter lag is improved by always supplying the current to CCD.*

- Self timer: 10 seconds (fixed)
  - When the self timer button is pressed, count down starts when shutter button is pressed.
  - The count down stops wen the self timer button is pressed during count down.
  - After the picture is taken, it returns back to normal shooting mode.
  - Sound the buzzer at 1 second (1Hz) intervals during the selftimer operation.
- Macro mode: shooting range
  shooting range: 20 cm to 50 cm (6 cm to 50 cm at the wide most range)
- Quick shooting

Table 1-1. Quick Shooting

After shooting indication	Transferring method
Indicating confirming image (2 sec)	It indicates freeze image for 2 sec. and performs CF transfer. Then it indicates through image which means the camera is ready to take pictures.
Recording	After recording, it performs CF transfer along with audio files.
Shifting to simple playback mode	After performing CF transfer, the camera returns to simple playback display. During the CF transfer, it indicates freeze image.

NOTE: *When there is no restrictions, CF transfer is always performed. Conditions that the camera does not become shooting mode after CF transfer is completed.*

- *Continuous shooting*
- *Interval shooting*
- *Sound recording after shooting*
- *When batteries are low (when the power is supplied from batteries.)*
- *When buffer memory becomes full.*
  (If the buffer memory has space even for one photo, the camera allows the next picture taking.)
- *When CF card memory capacity is not enough.*
- *When transferring the pictures taken by fixed exposure.*
- *Any other conditions that transferring to CF should be given priority.*

- Continuous shooting
  The camera continues taking pictures while the shutter button is pressed.
  - Full-size: approx. 1.5 images / second
  - VGA: approx. 2 images / second

- Continuous shooting is available up to the file size of 3732 KB of usable buffer memory.

NOTE 1:*Flash is set Off forcibly.*

NOTE 2:*★★★H mode is prohibited.*

- Digital Zoom
  1.1x to 2 x zooming (0.1x step) by Seamless Digital zoom is available.
  It stores images, adjusting the image quality to the image size of each recording mode.
  It means as follows;

★:	640 x480
★★:	1600x1200
★★★,★★★H (TIFF):	2048 x 1536
★★★H:	2544 x 1904

- Monochrome
  Available at ★,★★,★★★,★★★H (TIFF),★★★H
- Interval shooting
  - Shooting minimum interval; 5 to 30 seconds (various depending on the shooting condition).
  - Shooting maximum interval; 24 hours
  - Shooting setting interval; Setting available by 1 second in increments
- Stitching
  Stitching shooting more than 10 horizontal pictures is available.
  - Layout: 1 x n (1 horizontal line), 2 x n (2 horizontal lines)
  - Image size : ★/★★/★★★
- Full auto shooting
  The camera decides various setting automatically. User only can change strobe setting and select pictures.
  - Polytomy photometry
  - ISO sensitivity: 100
  - White balance: AUTO
  - Exposure adjustment is not available
- Manual shooting
  Auto exposure / aperture priority / manual exposure / shutter speed priority is selectable.
  - Auto exposure
    Exposure adjustment (0.2EV step), Photometry method, ISO sensitivity, W/B setting and Focus (AF or manual) are selectable.
  - Aperture priority program AE
    Aperture, Exposure adjustment, Photometry method, ISO sensitivity, W/B setting and Focus (AF or manual) are selectable.
  - Shutter speed priority program AE
    Compliant by using sensitivity UP (DOWN) simultaneously.
  - Manual exposure
    Aperture, Shutter speed, Photometry, ISO sensitivity, W/B setting and Focus are selectable.
  - In any modes, if the proper exposure cannot be set, EV warning will be indicated.
  - Choice of shutter speed
    8, 4, 1/2, 1/3, 1/4, 1/5, 1/6, 1/8, 1/10, 1/12, 1/15, 1/18, 1/22, 1/27, 1/30, 1/35, 1/40, 1/48, 1/55, 1/60,1/70, 1/80, 1/90, 1/100, 1/110, 1/125, 1/150, 1/165, 1/180, 1/200, 1/225, 1/250, 1/300, 1/350, 1/400, 1/450, 1/500, 1/600, 1/675, 1/750, 1/1000
  - Choice of shutter speed at shutter priority mode (13 steps)
    8, 4, 2, 1, 1/2, 1/4, 1/8, 1/15, 1/30, 1/60, 1/125, 1/250, 1/500
  - Choice of aperture
    F2.0, F2.3, F2.8, F4.0, F5.6, F8.0

1.2.4 Playback Mode

Playback image is QVGA (320 X 240) image except at split display mode and magnification display mode.

- Normal replay
  Picture image displayed by switching.
- Split display
  No split display (normal), 4 images, 9 images are selectable.
  4-images display and 9-images display scrolls 4 pictures or 9 pictures all together.

- Magnification display
  - Magnify an image x1.1 to x3 to display.
  - Smooth scrolling available.
  - The main image is displayed during the magnification process. (The magnification process can be cancelled by the W button during the data reading.)
- Deletion
  1 image deletion and all images deletion are selectable.
- Lock
  Selected images can be locked.
  Locked images cannot be deleted until lock is cancelled.
- Detailed information
  Image No., Date, Shutter speed, Aperture, Exposure adjustment, Flash, White balance, Photometry, Macro, Digital zoom and ISO sensitivity are indicated.
- Slide show
  Normal replay / return is available at the paused display.
- Sound replay/ After-recording
  Playback: can be stopped halfway.
  After-recording: max. 10 sec is possible. (can be stopped halfway)
- Simple playback function
  - When the camera is on the shooting mode, it can be turned to the playback mode temporarily. This function allows user to check the image after shooting without stress.
  - Only the following functions are available for simple playback; normal replay, Split display, one image deletion, all images deletion, sound replay, lock and print.
- Video recording
  Selection of video recording (when there are many), playback, synchronous sound replay, deletion of video recordings are available. (Refer to “Video Recording Mode” on page -16)
- Print
  Print is available. Up to 9 sheets per an image is supported.

1.2.5 Set Up Mode

- Language selection
  Japanese, English, French, German, Italian, Portuguese, Spanish, Chinese
- Date setting
  Setting of the year, month and day or the hour, minute and second is available. The order of year, month and day to display is automatically set according to the language selected.
  Setting of the order of year, month and day and the hour indication in 12 hours or 24 hours are available.
- Shoot mode setting
  Full auto, Program and Manual are selectable.
- Color / Monochrome
  Color shooting / Monochrome shooting are available
- Shoot mode setting
  - Slow synchronous (Trailing / Leading)
  - Flash external hyper (JPEG / TIFF)
  - Importing custom W/B is possible.
  - Check image (Yes / No)
  - Seamless digital zoom (Yes / No)
  - Compression ratio setting (Normal / Low)
- Camera setting
  Power save function, Brightness of LCD monitor setting
  Speaker volume (Hi / Low)
  Beep sound setting (Always / Shutter / Never)
- Memory setting
  Compact Flash memory Card format, DCF directory setting, expanded functions Add / Delete
- Video signal selection
  NTSC / PAL

1.2.6 Video Recording Mode

- Recording
  - Maximum 35 seconds continuous shooting (Up to 25 seconds with the sound recording.)
  - When the video recording is enabled, by pressing the shutter button, the shooting will be started.
  - Pressing shutter during video recording will end recording.
  - Simultaneous voice recording
  - Seamless digital zoom operation is available during video recording. (Optical zoom is not available.)
  - Format: motion JPEG for QTM. PAL is 12.5 frame/ sec.
  - Digital zoom is available during video recording.
- Playback
  - Video and sound playback are available

1.2.7 Sound Mode

- Recording
  - Sound recording and after recording are available.
  - Recording time: Max. 10 sec.
  - Cut off amid of sound recording is available
- Playback
  - Sound playback is available.
  - Volume can be adjusted (Hi / Low) by the setting of SET UP mode.

1.2.8 Print Mark Function

- Print image selection
  - Playback mode / Easy playback mode
  - Number of print is synchronized to the number of pressing of DPOF button. (up to 9 sheets)
- Filter function setting
  When each filter is set and an image is printed out by a specified EPSON printer, the following image processing is available.
  - Sharpness (Hi / Low)
  - Brightness (Hi / Low)
- Other print setting
  - All images index print
  - Number of print setting

1.2.9 Communication with PC

- Unlike previous model “Photo PC3000Z” communicating with PC by all dial switches is available in PhotoPC 3100Z.
- SCSI command of bulkonly is applied for the protocol of communication command and USB storage class. [USB Mass Storage Class UFI Command Specification Rev.1.0]

1.2.10 Memory

- Internal RAM Memory: 16 MB
- Internal ROM memory: 2 MB (Program Only)
- Image Memory:
  - Compact Flash Memory Card
  - CF card access: up to 256MB
  - PC-DOS format: 512 B/Sector
  - 16bit FAT (Up to 64 MB)

NOTE: *Although the capacity of image memory for CF card access is designed to be possible up to 2 GB, the usability only up to 256 MB has been confirmed.*

1.2.11 Internal Clock

- ☐ Internal clock
  - ■ Internal clock is built-in
  - ■ Record the shooting date and time on the image (Month / Day / Year, Hour / Minute / Second)
- ☐ Date and time are held by lithium ion secondary battery. (When lithium ion battery is charged full: date and time are held for at least 3 days. To charge lithium ion batter full, at least 48 hours required by battery connection or AC adapter connection. However, please note that the battery has to be taken out and in by approximately every 16 hours since the protection circuit does not allow to continue the charging more than 16 hours. When charging the camera, you do not have to turn the camera power on.)

1.2.12 Focus distance and step

Table 1-2. Focus distance and steps

Normal	Macro
AF (auto)	AF (auto)
(approx. 1 m)	M1 (approx. 20 cm)
(approx. 3 m)	M2 (approx. 50 cm)
(infinity)	–

1.2.13 Miscellaneous

- ☐ Lens cap
  Removed and installed manually.

NOTE: *With lens cap on, you cannot turn on the camera on the shooting mode. Lens cap prevent the lens from veering out. Playback and other operations are possible with the lens cover on.*

- ☐ Internal flash
  Auto (pre-flash method auto tone adjustment) / Off / Forced flash / Red eye reduction / Slow synchro (for night view. user can select either trailing or leading flash.)
- ☐ Effective flash range
  - ■ Normal mode: 0.5 - 4.2m

CAUTION

It causes over-exposure if you take photos with strobe for a subject within 0.2m on macro mode.

1.3 Indication

1.3.1 Overview

- LCD monitor
  - 1.8 type low temperature poly-silicon TFT color LCD
  - 1.1 M pixels: 512 x 218 pixels
  - A visual field covers more than 98% of the capturing image field.
  - Displaying taken images at the playback mode: 100% of an image field is displayed.
- Beep sound / Shutter sound
  Always / Only for shooting / None are selectable
- Self-timer
  - Front side red LED indication
    -First 8 seconds: slow blinking
    -Last 2 seconds: high speed blinking
  - Beep sound from a speaker is generated synchronizing with the blinking of LED according to the setting of beep sound.
  - Beep the speaker sound (1Hz) in accordance with the setting of operation sound.
- Control LCD panel (Monochrome LCD)
  - Indicates the numbers of images more can be taken. (3 digits)
  - Indicates aperture at half-shutter
    (only for program / manual mode)
  - indicates shutter speed at half-shutter (only for program / manual mode)
  - Indicates shutter speed at half-shutter
    (only for program / manual mode)
  - Indicates exposure adjustment
  - Indicates resolution of image (including Monochrome and HyPict)
  - White balance
  - Sensitivity
  - Self timer mark
  - Flash mode
  - Battery warning mark
- View Finder (VF) side lamp
  - 3 modes indication : green signal ON / Blink / Off
  - 3 modes indication : red signal On / Blink / Off

1.3.2 LCD Panel Indication

The Panel indication is explained below.

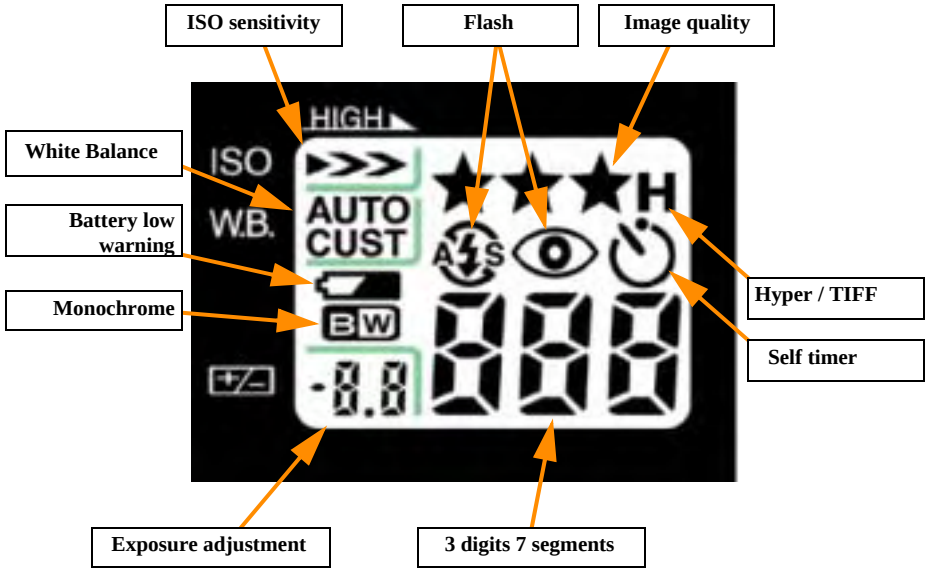


Figure 1-2. Panel Indication

ICONS

The table below explains the function of the icons on LCD.

Table 1-3. Icons

Icon	Explanation
ISO sensitivity	Indicates the current level of ISO sensitivity.
White balance	Indicate the current level of white balance.
Battery low warning	Indicated when the battery gets low.
Exposure adjustment	• Indicates exposure adjustment. • Indicates aperture. (Not applicable at half shutter and full auto setting.)

Table 1-3. Icons

Icon	Explanation
Image quality	Indicates image quality (resolution).
Hyper / TIFF	Hypict mode or TIFF
Monochrome	Indicated at the monochrome mode.
Self timer	Indicated at the self timer shooting mode.
Flash	Indicates the strobe setting.
3 digits 7 segments	• Indicates the number of pictures more can be taken. • Indicates shutter speed. (Not applicable at half shutter and full auto setting.) • Indicates other mode settings.

1.3.2.1 3 Digits 7 Segments -- Specification

STILL IMAGE SHOOTING (VF, LCD, CONTINUOUS SHOOTING)

- ☐ Indicates the number of pictures more can be taken on the current image quality (resolution).
- ☐ Indicates shutter speed on half-shutter.
  (Not applicable for full auto.)
- ☐ When writing into the compact flash memory, the segment is indicated as follows.

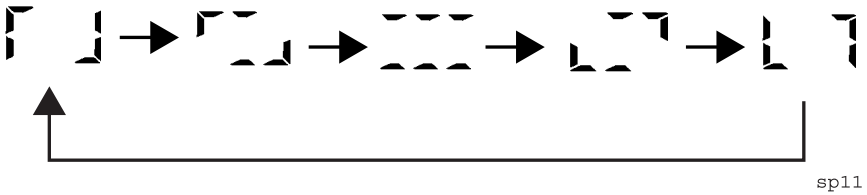


Figure 1-3. Writing into Compact Flash Memory

INTERVAL SHOOTING

- ☐ Indication is the same as still image shooting until shooting started.
- ☐ Indication is the same as still image shooting while writing into the compact flash.
- ☐ The figure below is the indication on the standby mode at the interval shooting.

Figure 1-4. Interval Shooting Indication

VIDEO RECORDING

- ☐ Normal
  Indicates the number of video recordings more can be recorded.
  (25 seconds is counted as 1 film.)
- ☐ During video recording
  Indicates how long you can record more. (seconds)
- ☐ While writing into the compact flash memory.
  Indication is the same as still image shooting.

PLAYBACK, EXPANSION MODE

Indication is as shown below.

Figure 1-5. Playback and Expansion Mode

COMMUNICATING WITH PC

- ☐ Like EPSON previous models, ★ scrolls.
- ☐ Turn the indications off except ★ .

RECORDING

Indication is as shown below.

Figure 1-6. Recording

SET UP

Indication is as shown below.

Figure 1-7. Set Up

1.3.2.2 ISO Sensitivity

The following is the ISO sensitivity indication.

- ☐ Standard :
- ☐ Fine :
- ☐ Super fine :

Figure 1-8. ISO Sensitivity

1.3.2.3 White Balance

STILL IMAGE SHOOTING / VIDEO RECORDING

- ☐ Indicates AUTO when “white balance = Auto” is selected (including the time of Full auto shooting).
- ☐ White Balance = Custom
  Indicates CUST
- ☐ White Balance = Fixed
  No indication.

OTHER SITUATIONS

No indication.

1.3.2.4 Battery Low Warning

- ☐ Battery is enough
  No indication
- ☐ Battery is low
  Battery low icon appears.
- ☐ Battery is almost out
  Battery low icon blinks and then the camera will be shut down.

1.3.2.5 Exposure Adjustment

FULL AUTO SHOOTING

No indication.

PROGRAM / MANUAL SHOOTING

- ☐ Indicates exposure adjustment value.
- ☐ Only at half shutter, indicates aperture.

OTHER SITUATIONS

No indication.

1.3.2.6 Image Quality (Resolution)

Image quality changes as shown below each time the image quality button is pressed.

★★ → ★★★ → ★★★^{H} → ★ → ★★

NOTE: *When the mode is continuous shooting, the image quality setting skips* ★★★^{H}.

NOTE: *On the video recording, there is no indication of image quality.*

1.3.2.7 Monochrome

Monochrome icon is indicated only on the monochrome shooting mode.

1.3.2.8 Self Timer

- ☐ Press the self timer button on the shooting mode to set the self timer.
  - ■ Self timer icon will be indicated.
  - ■ Press the shutter button.
    The self timer icon will be blinking for 10 seconds.
- ☐ Other modes (not shooting mode)
  No indication
- ☐ Press the self timer button while the self timer icon is on. Self timer icon will be off.

1.3.2.9 Flash

Press the flash button on the shooting mode. The icon will be switched as shown below.

- ☐ Full Auto Shooting

Figure 1-9. Flash Indication (Full Auto)

- ☐ Program / Manual Shooting

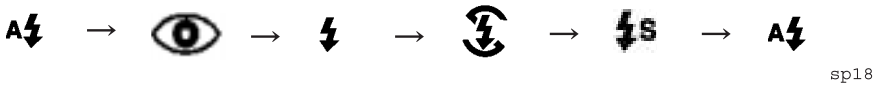


Figure 1-10. Flash Indication (Program / Manual)

- ☐ Continuous / Video Shooting
  Flash cannot be used. The icon below is indicated.

Figure 1-11. Flash Forbidden Icon

- ☐ Other situations
  No indication.

1.3.3 LED Condition

See the table below for the LED condition.

Table 1-4. LED Condition

	Shooting LED Red	Shooting LED Green	Front LED
Ready to shoot		ON	
Focusing		Blinking (0.2 sec)	
Focus lock		ON	
CF is full	Blinking (0.5 sec)		
Battery Low	Blinking (1.0 sec)		
Error	ON		
Self timer		ON	First 8 sec: low speed blinking (0.5 sec) Last 2 sec: high speed blinking (0.2 sec)
Video shooting		Blinking (1.0 sec)	
Power on (standby)		Blinking (0.2 sec)	
With lens cap on		Blinking (0.2 sec)	
CF is not inserted.		Blinking (0.2 sec)	

1.3.4 LCD Monitor

LCD monitor has the color frames indication according to respective functions and these frames are indicated only on the LCD shooting mode and on the special continuous shooting mode.

NOTE: *The priority of the color frame indication is as follows. Monochrome (Blue) < Digital zoom (Yellow) < Continuous Shooting (Red) < Video (White)*

Table 1-5. Color Frame

Color Frame	Mode	Note
No frame	Standard	
Green frame	Monochrome	“MONOCHORME” is indicated for 3 seconds.
Blue frame	Digital zoom	“DIGITAL ZOOM” is indicated for 3 seconds.
Yellow frame	Panorama	“PANORAMA” is indicated for 3 seconds.
Red frame	COntinuous Shooting	
White frame	Video	

1.4 Operation

1.4.1 Switch / Button

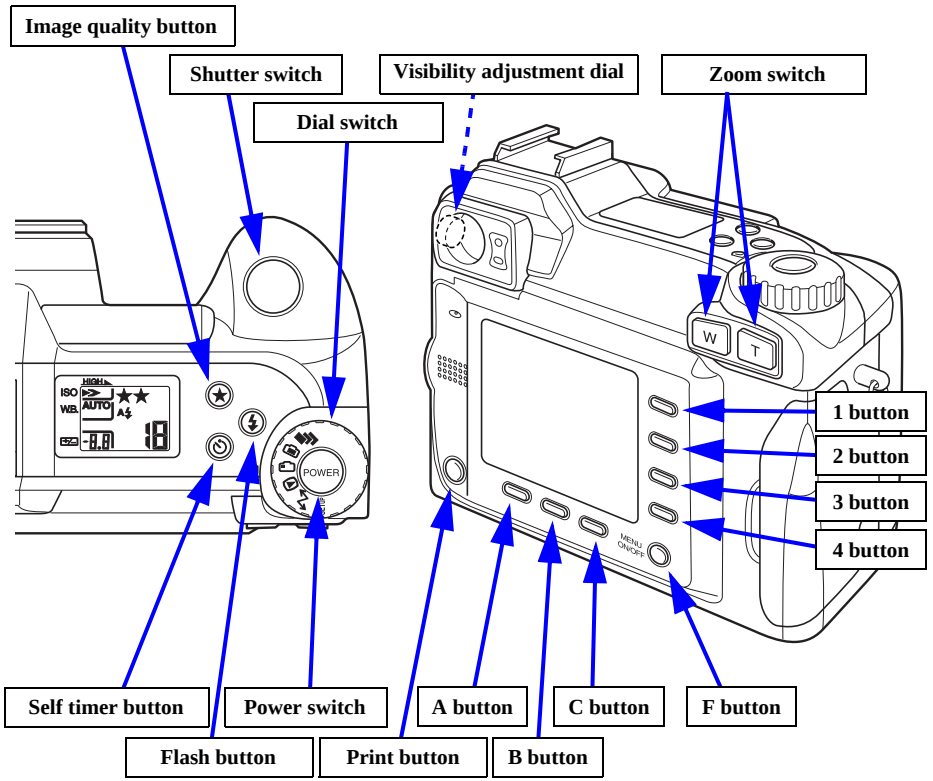


Figure 1-12. Button Layout

Table 1-6. Switch / Button List

Switch / Button		Indication	Meaning / Functions
Dial switch			Special shooting mode
			LCD shooting mode
			VF shooting mode
			Playback mode
			Expansion / PC connection mode
		SETUP	Set up mode
Shutter switch		No indication	Shutter
Zoom switch		W,T	Zoom selection
Visibility adjustment dial		No indication	Adjust visibility
Power SW		POWER	Power ON / OFF
Control button (Top)	Image quality button (resolution)	★	★/★★/★★★/★★★^{H} switching
	Flash button		Flash function switching
	Self timer button		Self timer
Menu button (Back)	1 button	No indication	Select menu
	2 button	No indication	Select menu
	3 button	No indication	Select menu
	4 button	No indication	Select menu
	A button	No indication	Select menu
	B button	No indication	Select menu
	C button	No indication	Select menu
	F button	MENU ON/OFF	Menu indication ON /OFF
	Print button		Select an image to print

1.4.2 Sinking Lens Control

CONDITIONS TO MOVE THE LENS FORWARD

- ☐ When the camera is set ready to take picture with the lens sunk.
  (When powering ON the camera or when mode is switched by dial switch.)
- ☐ When the camera received the command from the PC to move the lens forward.

CONDITIONS TO SINK THE LENS

- ☐ When powering OFF the camera with the lens craned.
- ☐ When battery power is exhausted.

1.4.3 Setting Stored

You can store setting in the camera and these data are classified into three levels: A to C.

- ☐ Rank A
  Data are stored in the flash ROM and remained until complete reset.
  - ■ Emulation setting
    Including NTSC/ PAL.
  - ■ Indication method of date setting (order of year, month and day, switching of 24 hours or 12 hours indication system).
  - ■ Compression ratio setting (normal compression, low compression)
  - ■ Digital zoom ON/OFF setting
- ☐ Rank B
  Data are stored until the back-up in the lithium ion secondary battery becomes invalid.
  - ■ Resolution switching
  - ■ Flash switching
    Program / Manual
  - ■ Each setting of SETUP mode
    All items except the ones listed in Rank A.
  - ■ *Various settings on the SETUP mode*
    Not including the setting command.
  - ■ Photometry method
  - ■ Values on manual
    Shutter speed / Aperture / Focus
  - ■ Slide show setting
  - ■ Date setting
    When date is cleared: indicates date setting menu when LCD is on.
  - ■ W/B custom setting
  - ■ Program
  - ■ Normal / Sports / Portrait / Landscape
  - ■ ★★★^{H} resolution (Hypic/TIFF)
- ☐ Rank C
  Stored until the camera is turned off. Not including “off” of energy saving mode.
  - ■ Macro / Digital zoom
  - ■ W/B setting
    AUTO / Fixed / Custom
  - ■ Flash switch
  - ■ EV compensation (exposure adjustment)
  - ■ With sound / without sound (Video / Interval shooting)

1.4.4 Processing Time

Table 1-7. Processing Time

Quality setting	Time required for writing into CF memory (include the time to write into CF in case of TIFF.)	Playback processing time
Standard★	less than 7 seconds	0.5 sec
Fine★★	about 1.0 sec	0.5 sec
Super fine★★★	about 1.0 sec	0.5 sec
TIFF★★★H	about 22 sec	0.5 sec
Hyper★★★H	about 18 sec	0.5 sec

NOTE: *The time may become longer when the strobe charging time is included.*

The playback handling time is QVGA display time.

The Hypict shooting handling time varies according to the subject.

1.4.5 File Size and the Number of Pictures

1.4.5.1 File Size

Table 1-8. File Size (Reference Value)*

Quality setting		File size
Standard (640 x 480)	★	about 129KB / 79KB
Fine (1600 x 1200)	★★	about 529KB / 279KB
Super Fine (2048 x 1536)	★★★	about 1029KB / 529KB
Hypict (2544 x 1904)	★★★H	about 1.2MB
TIFF (2048 x 1536)	★★★H	about 9MB

NOTE: *The image data is compressed with JPEG format and the file volume varies according to the subject. The table above shows the average value.*

1.4.5.2 Average Number of Pictures Saved into CF Card

Table 1-9. Number of Pictures Saved in CF Card (Reference)

Quality setting		16M CF card
Standard (640 x 480)	★	Approx. 199 images / 12
Fine (1600 x 1200)	★★	Approx. 56 / 29
Super Fine (2048 x 1536)	★★★	Approx. 29 / 15
Hypict (2544 x 1904)	★★★H	Approx. 12
TIFF (2048 x 1536)	★★★H	Approx. 1

NOTE: *The figures above are estimated on our measurement conditions.*

The figures above are the minimum guaranteed number of pictures to save when no other files are saved in CF card. If CF card stores other files, the number of pictures saved in CF card will be smaller.

A captured image is stored with JPEG format and the image file volume varies according to the subject. The number of pictures saved in CF card may be smaller accordingly.

1.5 Interface

1.5.1 External Connection

The external connectors for PhotoPC 3100Z are as follows.

- ☐ USB connector
- ☐ A/V output
- ☐ AC adapter
- ☐ Compact Flash

USB INTERFACE

Table 1-10. Connector Pin Configuration

Pin #	Signal	I/O	Explanation
1	VDD	I	Power
2	D-	I/O	Data signal
3	D+	I/O	Data signal
4	GND	-	GND
SHELL	SHELL	-	SHELL

NOTE: *The connector is the exclusive small connector made by MITSUMI, which uses exclusive USB cable.*

A/V OUTPUT

- ☐ NTSC / PAL
  Switched by SETUP menu
- ☐ Use exclusive A/V cable

Table 1-11. Connector Pin Configuration

Pin #	Signal	I/O	Explanation
1	VOUT	O	Video output
2	AOUT	O	Sound output
3	GND	--	GND

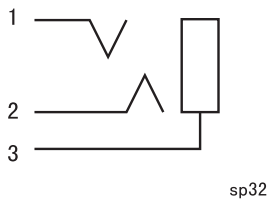


Figure 1-13. Connection Diagram

AC ADAPTER INPUT

- ☐ AC adapter exclusive DC input terminal (7.0V)
- ☐ Polarity: Center plus
- ☐ EIAJ Type2 ϕ4.4 mm
- ☐ AC Adapter: EU-40, 7V2.0A

COMPACT FLASH

- ☐ CompactFlash Interface
- ☐ CompactFlash Card Type1 supported

1.5.2 Exclusive Cable

This section explains the connection information of cables exclusive for PhotoPC 3100Z.

1.5.2.1 USB Cable

This USB cable is exclusive for PhotoPC 3100Z.

Table 1-12. USB Cable Specification

	Specification
Length	1.5mm
Connector	• Camera side: manufactured by HIROSE, 10 pin connector (male) • PC side: 9 pin DSUB (female)

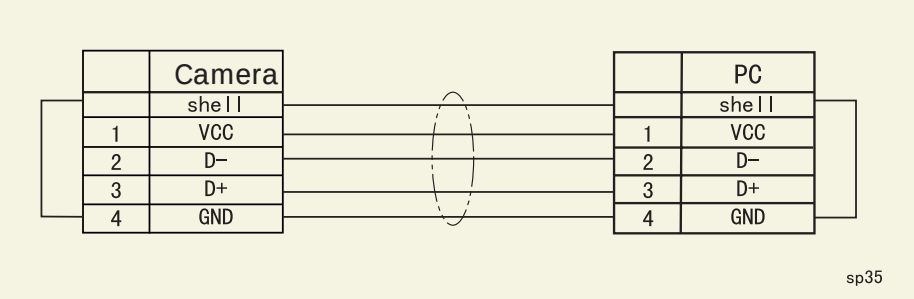


Figure 1-14. USB Cable Connection Diagram

1.5.2.2 A/V Cable

Table 1-13. A/V Cable Specification

	Specification
Length	1.5mm
Connector	• Camera side: ϕ3.5, Stereo plug • Video side: PCA plug (video: yellow, sound: white)

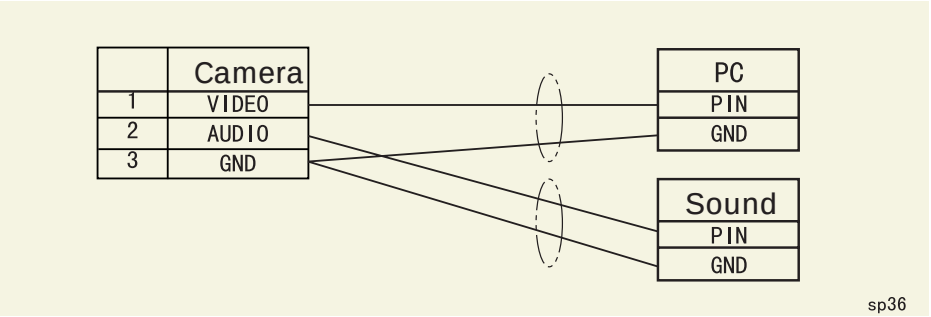


Figure 1-15. A/V Cable Connection Diagram

1.6 Communication Command Specification

1.6.1 Application

Matters which are not described in this section should conform to the conventional specification.

Serial communication is not handled. Specification relating to USB storage should conform to “USB Mass Storage Class UFI Command Specification Rev.1.0”.

1.6.2 Communication dial position

- Basic specification
  - Communication of the camera is available at all mode dial positions.
  - No operation to avoid the starting of communication (such as extraction of lens) is allowed at communication mode.
- Change and addition of communication command
  - SCSI command of Bulkonly is applied for the protocol of communication command and USB storage class.
  - Writing to the volume label of CompactFlash memory is “EPSON_DSC.”

1.6.3 Handling of QVGA image

- Indicates at a convenient address to leave off after thumb nail.
- Import images of 3 different sizes (main image, thumb nail image (160 x 120) and QVGA image (320 x 240) on a file.

1.6.4 Handling of Video

- Basic specification (common with the camera)
  - Video consists of a single MOV fail and is recorded in Root\MOVIE folder on CFM.
  - File name is EPSNnnnn.MOV (nnnn: file number).
  - Ignore any MOV file exists in DCF directory on CFM (including EPSON block).
  - Only MOV file is recognized (count the number of sheet) in Root\MOVIE folder on CFM. All others are ignored.
  - Unlike still images, voice memo (WAV file) can not be attached. Even WAV file of the same file number will be ignored.

1.6.5 Handling of TIFF

- Basic specification ((common with the camera)
  - TIFF image consists of a single TIF fail and is recorded in EPSON block on CFM. It does not have THM file for replay compatibility. File name is EPSNnnnn.TIF (nnnn: file number). Naming rule is the same as that of DCF base file except the extension. For example, if the first frame is taken in JPG format and the second is in TIF on an empty CFM, EPSN0001.JPG and EPSN00 02.TIF are recorded.
  - TIF file is recognized (count the number of sheet) in DCF directory on CFM (including EPSON block) as well as DCF base file.
  - Voice memo (WAV file) can be attached as well as DCF base file.

1.6.6 Others

- Product ID of USB is SX322 : 0x0604
- Access from PC is always possible at the time of communication.
- Power of the camera turns off when no-operation status of the camera stands for 5 minutes in communication at the battery drive.
- As well as SX321, power of the camera turns off after 15 minutes have past when using AC adapter.

1.7 Power Supply

1.7.1 Battery

BATTERY SPECIFICATION

- ☐ AA Size: 4 AA size batteries are needed
- ☐ Ni-HM charging battery / Ni-Cd charging battery / Alkaline battery / Lithium battery

NOTE: *Mangan batteries must not be used.*

AC ADAPTER

Exclusive AC adapter must be used.

- ☐ EU-40
  7.0V, 2.0A

DATE BACK-UP BATTERY

- ☐ Lithium ion secondary battery

1.7.2 Battery Life

Table 1-14. Battery Life

Battery	Alkaline Battery	Ni-HM Battery (1500mAH)
LCD Shooting	155	180
VF Shooting	More than 4000 times of continuous shooting	More than 4000 times of continuous shooting
Playback	210 min	240 min

NOTE: *The figures above are estimated on our measurement conditions.*

LCD shooting : energy saving 30 seconds, strobe flashing 50%, image quality is ★★, normal compression, delete image by PC when CF is full, shooting interval 1 minutes (10 seconds before returning from power saving)

VF shooting : no strobe, image quality is ★, delete image by PC when CF is full, continuous shooting

Playback : no energy saving, switch images every 1 minute (LCD keeps on)

1.7.3 Energy Saving Function

APPLICATION

- ☐ Only when powering by batteries
- ☐ When AC adapter is used : 15 min. (interval shooting is possible).

SHOOTING WITH LCD OFF

Compliant with the setting at LCD on.

SHOOTING WITH LCD ON

- ☐ Energy saving mode: 30 seconds
  Shut down after 30 seconds
- ☐ Energy saving mode: 1 minute
  Shut down after 1 minute

- Energy saving mode: 5 minutes
  Shut down after 5 minutes

PLAYBACK MODE

- Shut down after 5 minutes not depending on energy saving mode.

SLIDE SHOW

- Always shut down by after one-round of slide show when AC adapter is using.
- When using batteries, it does not shut down until the battery runs out.
- When all image is selected, it does not shut down until the battery runs out.

RECOVER

- When shooting pictures:
  Recover by half shutter or re-powering the camera.
- When not shooting pictures:
  Recover with pressing 7 button on the back or re-powering the camera.

1.8 Environment Condition

1.8.1 Performing Environment & Storing Environment

TEMPERATURE

- ☐ Performing
  5 to 35 °C
- ☐ Storing
  -20 to 60 °C

HUMIDITY

- ☐ Performing
  30 to 80% (without condensation)
- ☐ Storing
  10 to 80% (without condensation)

1.8.2 Assumed Performing Environment

- ☐ Environment
  Home, Office, Outside
- ☐ Water resistance
  Not supported

1.9 Safety Standard & Reliability

1.9.1 EMI, Safety Standard

- ☐ USA

  FCC part15 subpart B class B

- ☐ Canada

  CSA C108.8 class B

- ☐ Europe

  EMC Directive 89 / 336 / EEC

  EN55022 Class B

  (CE - marking)

  EN61000-3-2 (when AC adapter is used.)

  EN61000-3-3 (when AC adapter is used.)

  EN50082-1

  IEC801-2

  IEC801-3

  IEC801-4

- ☐ Europe

  EN55022 (CISPR Pub.22) class B

- ☐ Australia

  AS/NZS 3548 class B

- ☐ Taiwan

  EMI: CNS13438-C6357

- ☐ Japan

  VCCI Class B

- ☐ Korea

  The rule of Electromagnetic wave in Korea

1.9.2 Reliability Standards

1.10 Ex-factory Setting

With a special setting mode, the setting of camera is changeable depending on the destination as well as PhotoPC 3000Z. The setting is the same as that for PhotoPC 3000Z.

1.10.1 Change process of camera setting

Proceed the setting for the following destinations.
(The default setting for the foreign country models is: language=English, Video=NTSC)

Table 1-15.

Destination		Change process
ETT	B144021 – **** *1	Change process A
EDG/EFS/EIS/EIB	B144031 – **** *1	Change process B
EUL	B144032 – **** *1	Change process B
EUL (Nordic)	B144033 – **** *1	Change process B
EAL	B144036 – **** *1	Change process B
EHK	B144035 – **** *1	Change process B
ESP	B144037 – **** *1	Change process B

NOTE: *variable factors depending on the product revision and the timing of ex-factory.*

Check the followings before the change of destination.

- Set the dial switch at the “SETup” position.
- Remove the CompactFlash (CF) card from the camera.

CHANGE PROCESS A : CHANGE INTO THE NTSC / ENG SETTING WITHOUT CHINESE INDICATION.

1. Push POWER button (the center of dial button) to turn the power on while pushing (Flash) button.
2. Confirm that the “NTSC / TWN” is indicated at the lower left of screen, then push POWER button again to turn the power off.

CHANGE PROCESS B : CHANGE INTO THE PAL / NO LANGUAGE SETTING.

Start from the language selection menu at the initial power on process.

1. Push POWER button (the center of dial button) to turn the power on while pushing (Self timer) button.
2. Confirm that the “PAL / SEL” is indicated at the lower left of screen, then push POWER button again to turn the power off.

NOTE: *If the display is switched into the language / video selection mode screen after proceeding the change process B, turn the power off without pushing the “BACK”.*

RETURN TO THE EX-FACTORY DEFAULT SETTING

In case of failure in changing the setting, it would be necessary to return to the ex-factory default setting. Push POWER button (the center of dial button) to turn the power on again while pushing (Image quality) button to return to the ex-factory default setting.

Table 1-16. Detail setting

Indication	Destination	VIDEO	Language	Procedure
NTSC/JPN	Japan	NTSC	Japanese	Shutter button + Power on
NTSC/ENG	USA, Korea	NTSC	English	Resolution button + Power on
NTSC / TWN	Taiwan	NTSC	English (no Chinese)	Flash button + Power on
PAL/SEL	Other than above countries	Select Lang. screen		Self timer button + Power on

CHECK POINT

After setting, the setting condition is changed and some factors such as date are initialized and reset.

1.10.2 Display check after changing the setting

The described number at the right of “Version :” in the following examples of display is the description of firmware.

AT THE END OF THE CHANGE PROCESS A

Confirm that the “NTSC / TWN” is indicated at the lower left of screen, then push POWER button to turn the power off.

Figure 1-16. Display at the end of change process A

AT THE END OF THE CHANGE PROCESS B

Confirm that the “PAL / SEL” is indicated at the lower left of screen.

Only at the change of setting into the “PAL / SEL”, the display will automatically changed into the below example a few seconds after changing. When confirming the indication of the “PAL / SEL”, push POWER button to turn the power off at the following display.

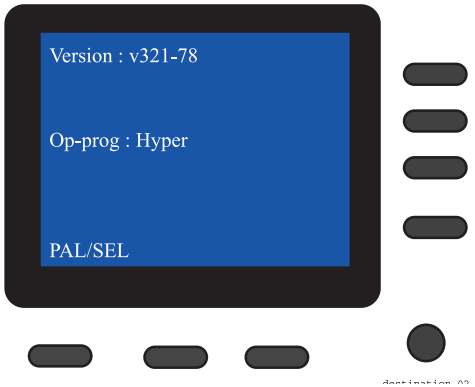


Figure 1-17. Display 1 at the end of change process B

Other than the change of setting into the “PAL / SEL”, the display would not be changed into the following example. Therefore, when the following display was shown, you can judge that the change of setting into the “PAL / SEL” was properly done.

Figure 1-18. Display 2 at the end of change process B

1.11 Inhibitions and Cautions

- ☐ Never see the sun through the view finder
- ☐ Never use any AC adapters other than approved one.
- ☐ Never use any batteries other than approved one.
- ☐ Never insert batteries with incorrect polarity.
- ☐ Remove batteries, if the camera is not used for a long time.

1.12 Optional items and specifications

1.12.1 optional items

- ☐ AV cable
  Mini-jack w/ RCA core (1 core turn type)
- ☐ 4 AA Alkaline batteries (by Matsushita)
- ☐ CF card 16MB (ECFA-16)
  SANDISK 16MB
- ☐ Camera case
- ☐ Shoulder belt
- ☐ Strap for lens cap
- ☐ operation manual

1.12.2 Option

- ☐ USB connection cable
  Mini USB cable w/ core (by MITSUMI)
- ☐ Accessory lens adapter
- ☐ AC adapter
  - ■ Model name : EU-40 (compatible use for Photo PC3000Z)
  - ■ Input voltage : AC 100-240 V ± 50-60 Hz 30 VA
  - ■ Output voltage : DC 7.0 V 2.0 A
- ☐ Ni-MH battery
  - ■ Model name : EU-24 (compatible use for Photo PC3000Z)
  - ■ Output voltage : 1.2V / 1 pc.
  - ■ Capacity : 1500 mAH / 1 pc.

NOTE: *Ni-MH batteries are sold in 4-in-one pack.*

- ☐ Ni-MH battery charger
  - ■ Model name : EU-38 (compatible use for Photo PC3000Z)
  - ■ Input voltage : AC 100-240 V ± 50-60 Hz 10 VA
  - ■ Output voltage : DC 1.2 V 490 mA x4
  - ■ Charge time : 2.5 hours (to charge 4 pcs.)

NOTE: *Battery charge is sold with 4 Ni-MH batteries in a set.*

- ☐ PC connection kit
  Consists of the following items:
  - ■ USB cable
  - ■ CD-ROM
  - ■ Operation manuals

CHAPTER

2

OPERATING PRINCIPLES

2.1 Board Component

The main component of this product is the electric circuit boards and lens assembly. The main components are shown in the figure below.

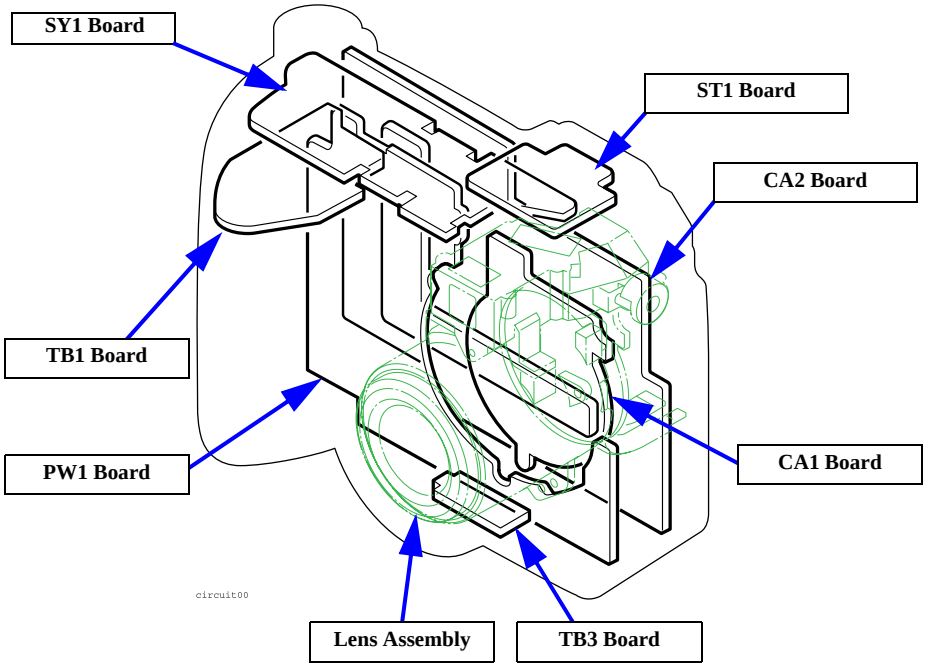


Figure 2-1. Main Component

The electric circuit is composed of CA1, CA2, SY1, TB1, TB3 and PW1 boards. The function of each board is explained below.

WARNING

Capacitor on the PW1 board is charged with strobe emission electricity and if you touch the capacitor terminal, you may receive electric charge. When you touch the board, handle it with the edge of the board and never touch the board surface.

In case of disassembly and assembly the camera because of its service requirement, be sure to discharge the electricity of the capacitor. The detail is to be referred to the section of "Disassembly / Assembly".

Table 2-1. Function of each board

Board	Functions
CA1	Inter line CCD image sensor • Control CCD clock. • Convert image data A/D ☐ Lens drive
CA2	Composed of RISC-CPU, ASIC, 16M bit Flash-ROM, 64M bit SDRAM. • Control lens assembly. • γ correction. • Generate color signal • USB control • LCD driver • Audio AMP etc.
ST1	Hot shoe terminal
SY1	8 bit micro processor • Input control key • Mode LCD display • Clock management
PW1	☐ Electric circuit • Switching regulator • Digital 5V, analog power supply output • Digital 2.5V power supply output • LCD power supply output • Digital 3.35V power supply output • Back light power supply output ☐ Strobe circuit
TB1	Battery contact
TB3	Lens cover sensor

2.2 Circuit

The figure below is the circuit block diagram of PhotoPC 3100Z.

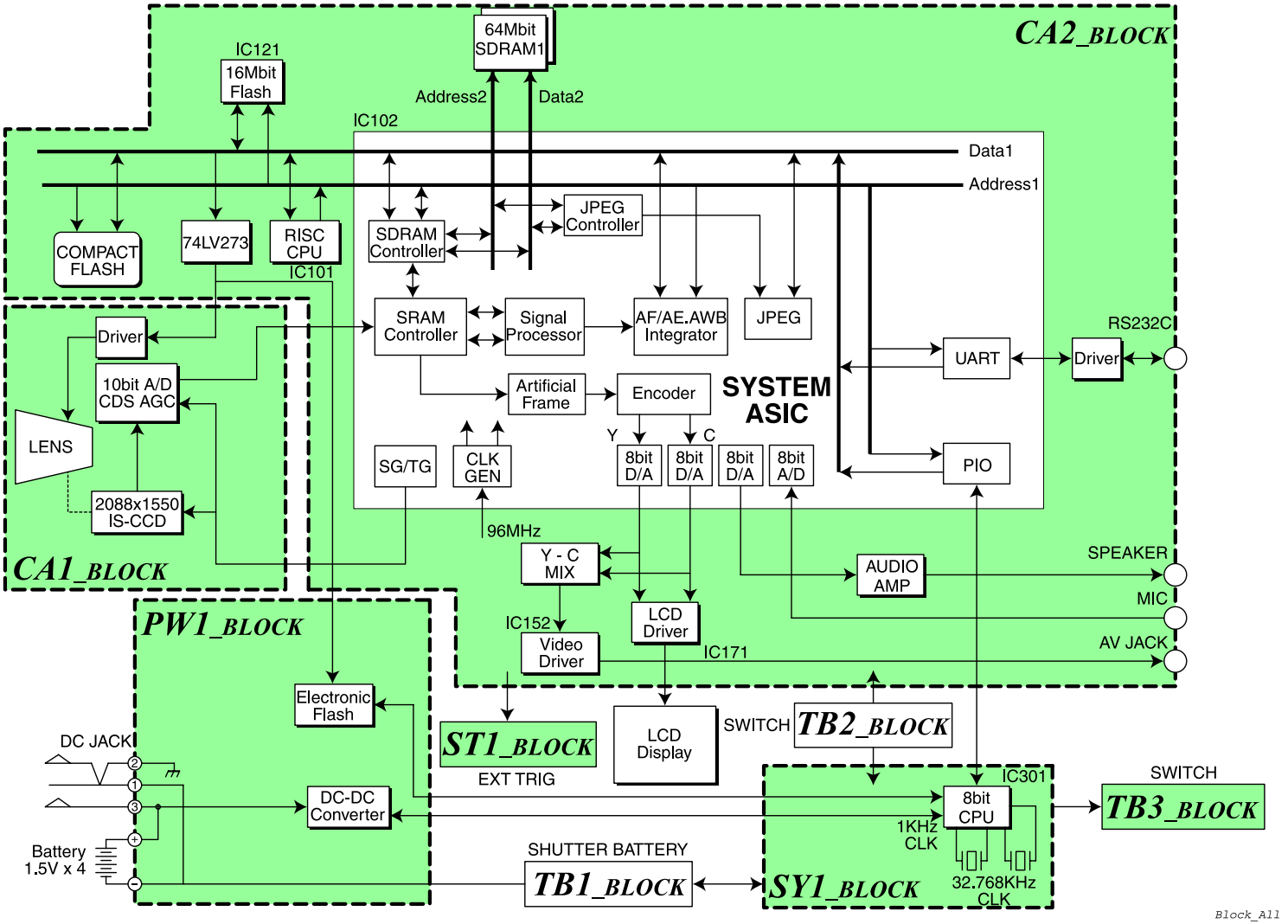


Figure 2-2. Circuit Block Diagram

2.2.1 CA1 Circuit Description

The figure below is the CA1 circuit block diagram.

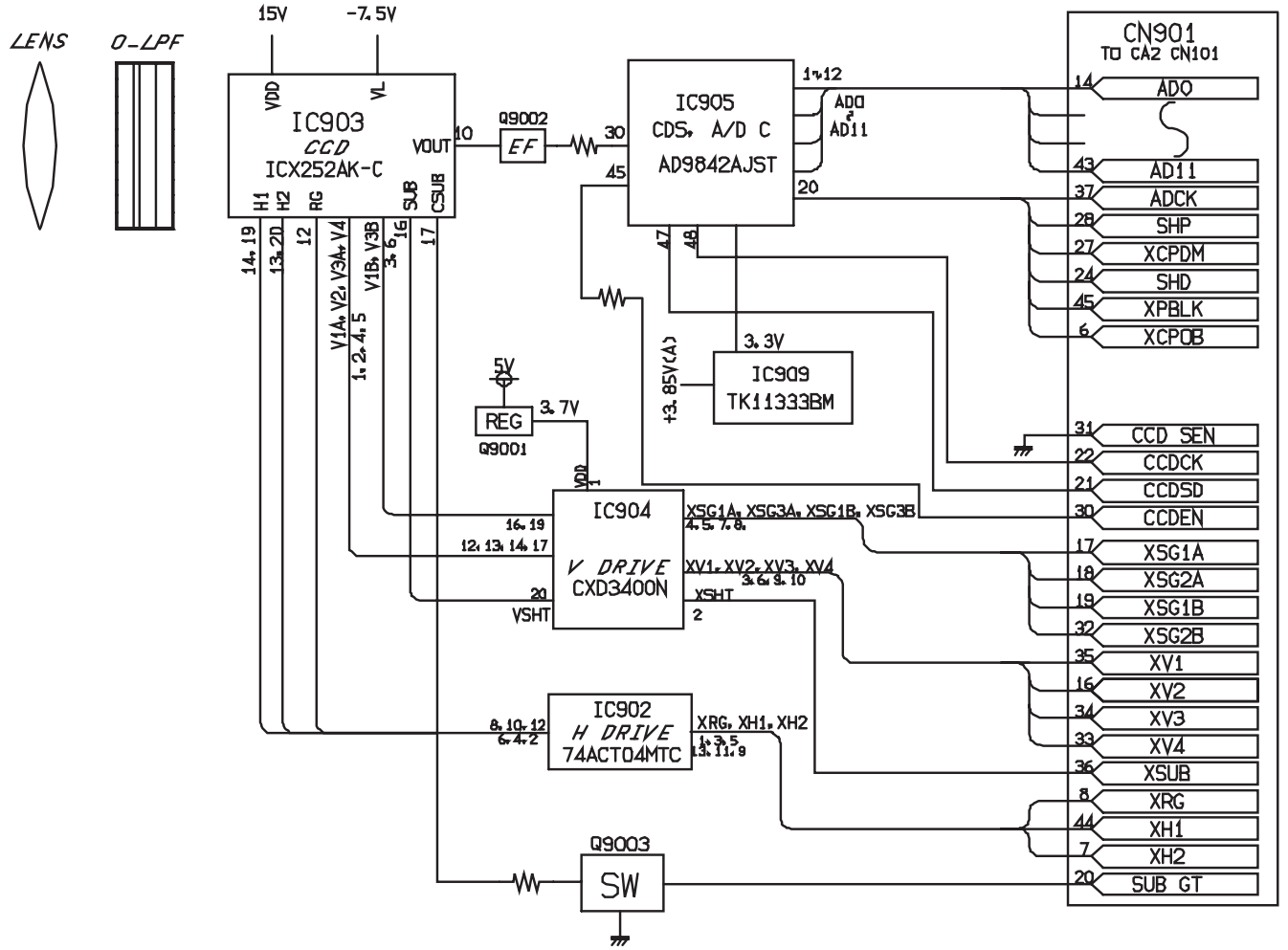


Figure 2-3. CA1 Circuit Block Diagram

2.2.1.1 Configuration

The CA1 board is mainly composed of the following ICs.

- ☐ IC903 (ICX252AK-B) : CCD imager
- ☐ IC902 (74ACT04MTC) : H driver
- ☐ IC904 (CXD3400N) : V driver
- ☐ IC905 (AD9842JST) : CDS, AGC, A/D converter

2.2.1.2 IC903 (CCD)

- ☐ Structure
  - ■ Interline type CCD image sensor
  - ■ Optical size : 1/108 type
  - ■ Effective pixels : 2088 (H) X 1550 (V)
  - ■ Pixels in total : 2140 (H) X 1560 (V)
  - ■ Optical black
    Horizontal (H) direction: Front 4 pixels, Rear 48 pixels
    Vertical (V) direction: Front 8 pixels, Rear 2 pixels
  - ■ Dummy bit number
    Horizontal: 28, Vertical:1 (only even number field)

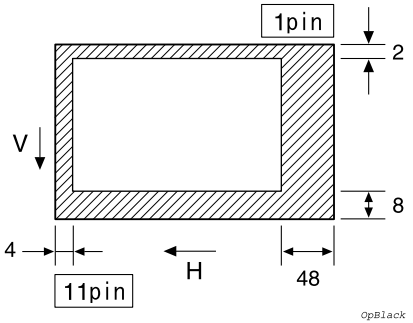


Figure 2-4. Optical Black Arrangement

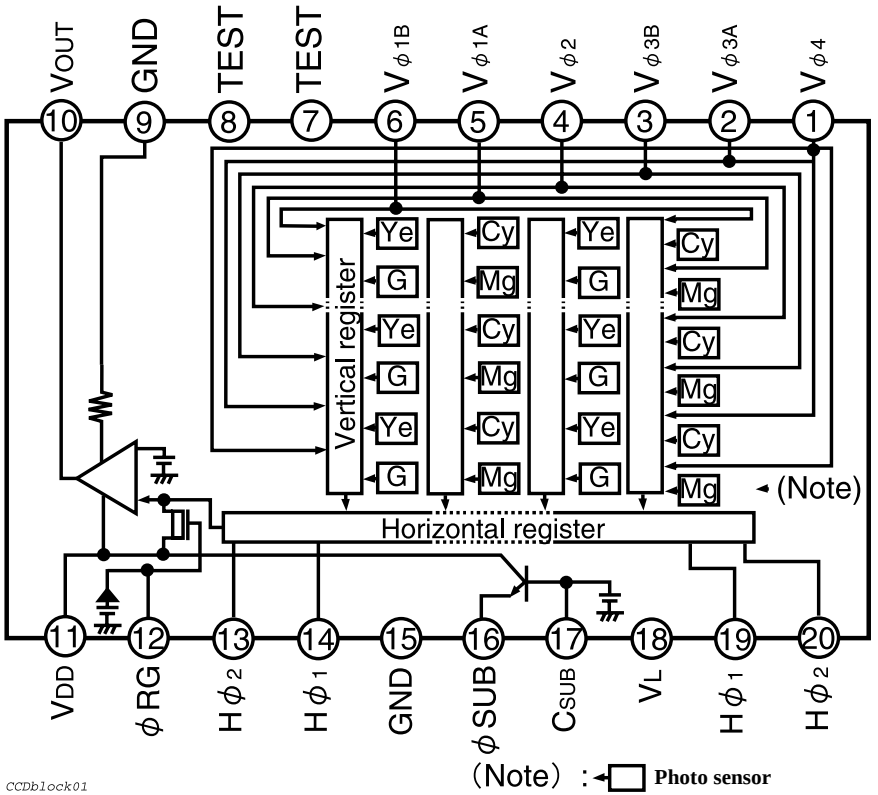
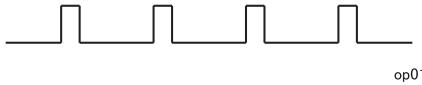
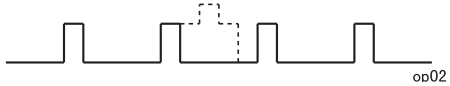
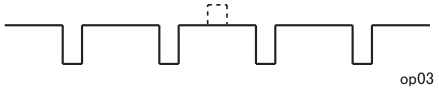
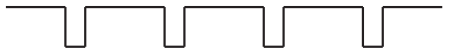
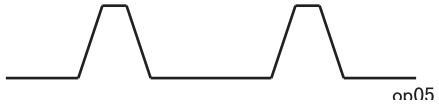


Figure 2-5. CCD Block Diagram

Table 2-2. CCD Pins Explanation

Pin No.	Symbol	Pin Description	Waveform	Voltage
1	V ϕ_4	Vertical resister transfer clock	 op01	-7.5V, 0V
2, 3	V $\phi_{3A,}$ V ϕ_{3B}	Vertical resister transfer clock	 op02	-7.5V, 0V, 15V
4	V ϕ_2	Vertical resister transfer clock	 op03	-7.5V, 0V
5, 6	V $\phi_{1A,}$ V ϕ_{1B}	Vertical resister transfer clock	 op04	-7.5V, 0V, 15V
9, 15	GND	GND	GND	0V
10	V_{OUT}	Signal output	-	Approx. 10V
11	V_{DD}	Circuit power supply	DC	15V
12	ϕ RG	Reset gate clock	 op05	12.5V, 16V
13, 20	H ϕ_2	Horizontal resister transfer clock	op06	0V, 5V
14, 19	H ϕ_1	Horizontal resister transfer clock	op07	0V, 5V
16	ϕ SUB	Substrate clock	DC	Approx. 8V
17	C_{SUB}	Substrate bias	DC	Approx. 8V (Different in each CCD)
18	V_L	Protection transistor bias	DC	

NOTE: *"---" when sensor read-out*

2.2.1.3 IC902 (H Driver) and IC904 (V Driver)

An H driver (IC902) and V driver (IC904) are necessary in order to generate the clocks (vertical transfer clock, horizontal transfer clock and electronic shutter clock) which drives the CCD.

IC902 is an inverter IC which drives the horizontal CCDs (H1 and H2). In addition the XV1-XV4 signals which are output from IC102 are the vertical transfer clocks, and the XSG1 and XSG signal which is output from IC102 is superimposed onto XV1 and XV3 at IC904 in order to generate a ternary pulse. In addition, the XSUB signal which is output from IC102 is used as the sweep pulse for the electronic shutter, and the RG signal which is output from IC102 is the reset gate clock.

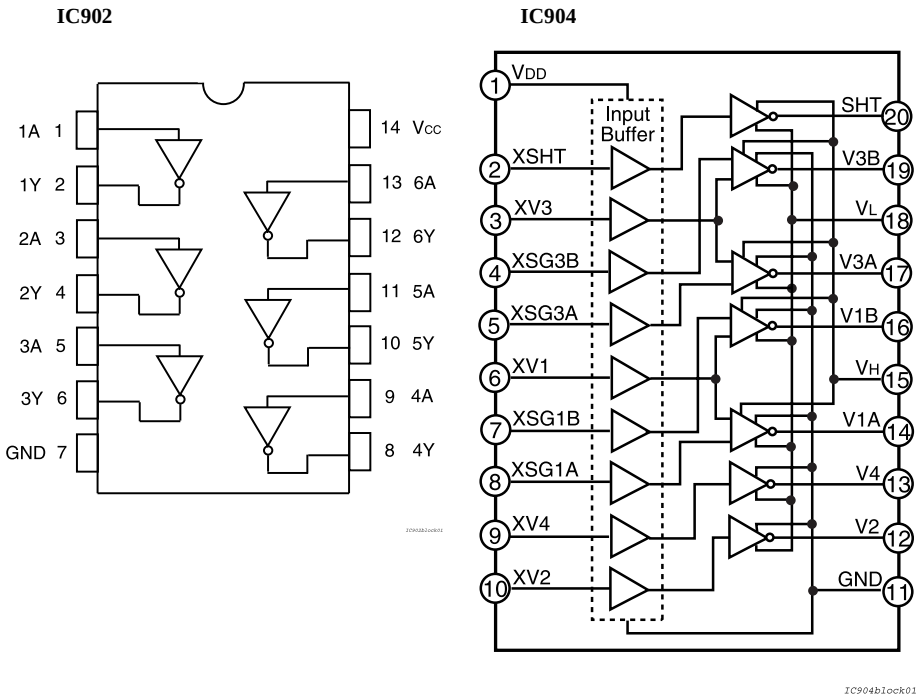


Figure 2-6. IC902/IC904 Block Diagram

2.2.1.4 IC905 (CDS, AGC Circuit and A/D Converter)

The video signal which is output from the CCD is input to Pins (30) of IC905. There are S/H blocks inside IC905 generated from the XSHP and XSHD pulses, and it is here that CDS (correlated double sampling) is carried out.

After passing through the CDS circuit, the signal passes through the AGC amplifier. It is A/C converted internally into a 12-bit signal, and is then input to IC102 of the CA2 circuit board. The gain of the AGC amplifier is controlled by pin (45)-(48) serial signal which is output from IC102 of the CA2 board.

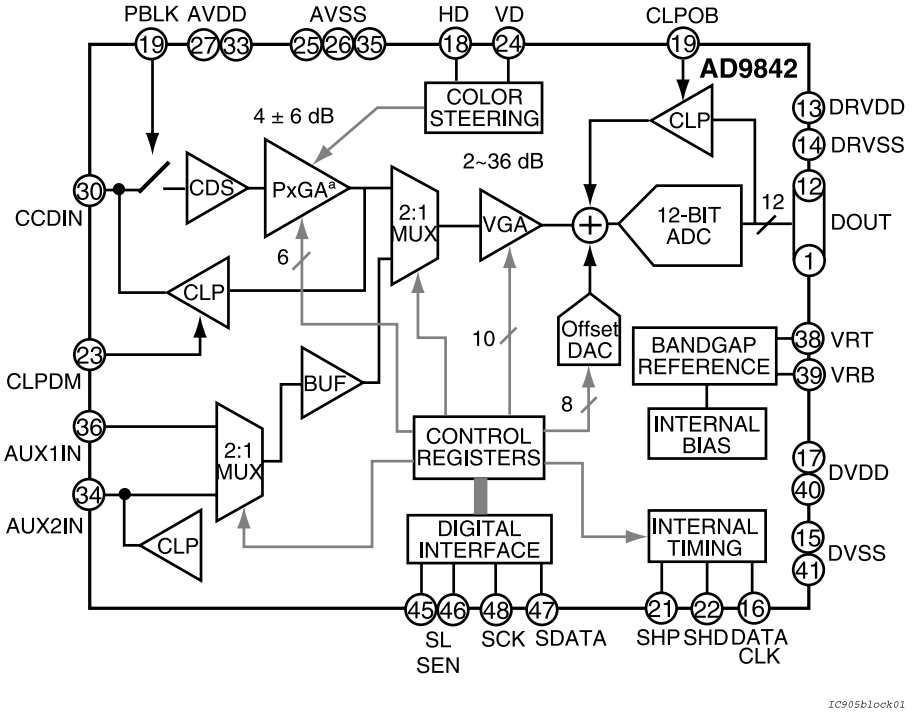


Figure 2-7. IC905 Block Diagram

2.2.1.5 Transfer of Electric Charge by the Horizontal CCD

The transfer system for the horizontal CCD employs a 2-phase drive method.

The electric charges sent to the final stage of the horizontal CCD are transferred to the floating diffusion, as shown in Figure 2-8.

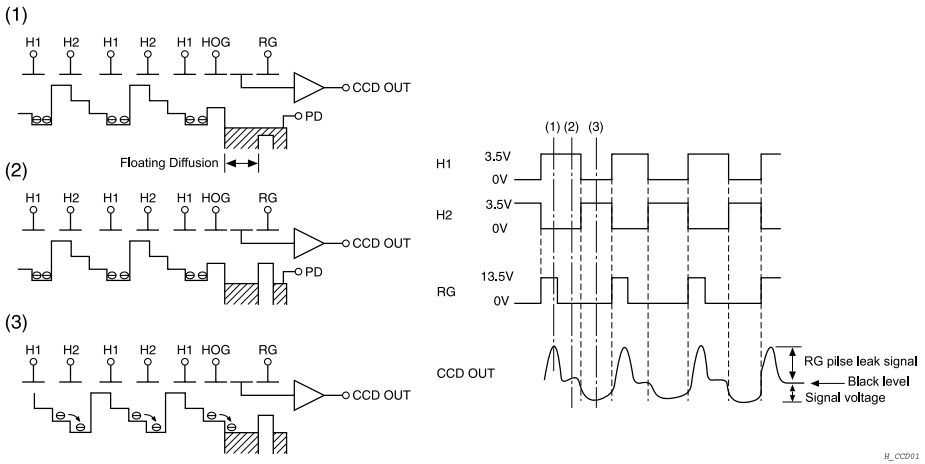


Figure 2-8. Horizontal Transfer of CCD Imager and Extraction of Signal Voltage

RG is turned on by the timing in (1), and the floating diffusion is charged to the potential of PD. The RG is turned off by the timing in (2). In this condition, the floating diffusion is floated at high impedance. The H1 potential becomes shallow by the timing in (3), and the electric charge now moves to the floating diffusion.

Here, the electric charges are converted into voltages at the rate of V = Q/C by the equivalent capacitance C of the floating diffusion. RG is then turned on again by the timing in (1) when the H1 potential becomes deep.

Thus, the potential of the floating diffusion changes in proportion to the quantity of transferred electric charge, and becomes CCD output after being received by the source follower. The equivalent circuit for the output circuit is shown in Figure 2-9.

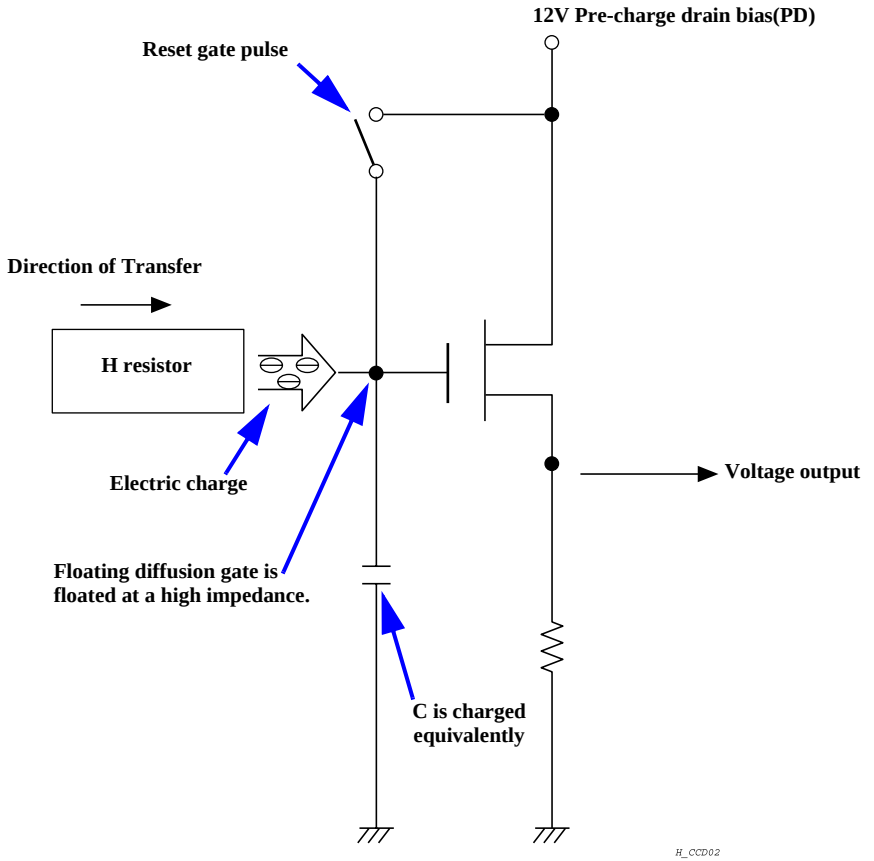


Figure 2-9. Theory of Signal Extraction Operation

2.2.2 CA2 Circuit Description

The figure below is the CA2 Circuit Block Diagram.

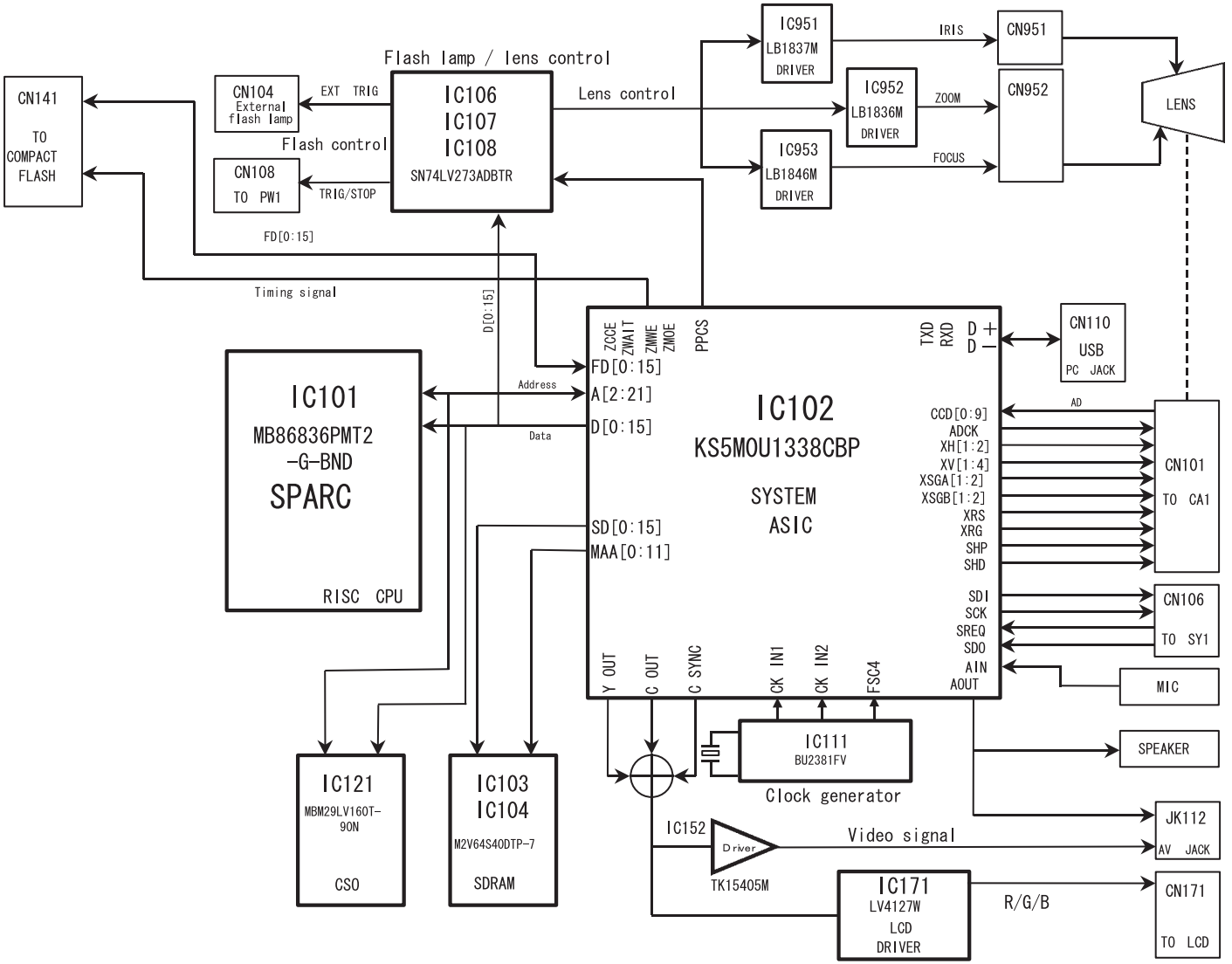


Figure 2-10. CA2 Circuit Block Diagram

2.2.2.1 Circuit Description

DIGITAL CLAMP

Extracting the average value of the optical black section of the CCD from the subsequent data makes the black level of the CCD output data uniform for each line. The optical black section of the CCD averaged value for each line is taken as the sum of the value for the previous line multiplied by the coefficient k and the value for the current line multiplied by the coefficient 1-k.

SIGNAL PROCESSOR

- γ correction circuit
  This circuit performs (gamma) correction in order to maintain a linear relationship between the light input to the camera and the light output from the picture screen.
- Color generation circuit
  This circuit converts the CCD data into RGB signals.
- Matrix circuit
  This circuit generates the Y signals, R-Y signals and B-Y signals from the RGB signals.
- Horizontal and vertical aperture circuit
  This circuit is used generate the aperture signal.
- AE/AWB and AF computing circuit
  The AE/AWB carries out computation based on a 64-segment screen, and the AF carries out computations based on a 6-segment screen.
- SDRAM controller
  This circuit outputs address, RAS, CAS and AS data for controlling the SDRAM. It also refreshes the SDRAM.
- Communication control
  - SIO
    This is the interface for the 4-bit microprocessor.
  - PIO/PWM/SIO for LCD
    8-bit parallel input and output makes it possible to switch between individual input/output and PWM input/output.
  - TG/SG
    Timing generated for 3 million pixel CCD control.
  - Digital encoder
    It generates chroma signal from color difference signal.
  - JPEG control
    Controls the interface for the externally-connected JPEG IC.

2.2.2.2 Outline of Operation

When the shutter opens, the reset signals (ASIC (IC102) and CPU (IC101)) and the serial signals (“take a picture” commands) from the 4-bit microprocessor are input and operation starts. When the TG/SG drives the CCD, picture data passes through the A/D and CDS, and is then input to the ASIC as 10-bit data. The AF, AE, AWB, shutter, and AGC value are computed from this data, and three exposures are made to obtain the optimum picture. The data which has already been stored in the SDRAM is read by the CPU and color generation is carried out. Each pixel is interpolated from the surrounding data as being either Ye, Cy, Mg. or B primary color data to produce R, G and B data. At this time, correction of the lens distortion which is a characteristic of wide-angle lenses is carried out. After AWB and γ processing are carried out, a matrix is generated Y, R-Y and B-Y, and aperture correction is carried out for the Y signal, and the data is then compressed by JPEG and is then written to card memory (compact flash).

When the data is to be output to an external device, it is taken data from the memory and output via the UART. When played back on the LCD and monitor, data is transferred from memory to the SDRAM, and the image is then elongated so that it is displayed over the SDRAM display area.

2.2.2.3 LCD Block

During monitoring, YUV conversion is carried out for the 10-bit CCD data which is input from the A/D conversion block to the ASIC and is then transferred to the DRAM so that the CCD data can be displayed on the LCD.

The data which has accumulated in the DRAM is passed through the NTSC encoder, and after D/A conversion is carried out to change the data into a Y/C signal, the data is sent to the LCD panel and displayed.

If the shutter button is pressed in this condition, the 10-bit data which is output from the A/D conversion block of the CCD is sent to the DRAM (DMA transfer), and after processor, it is displayed on the LCD as a freeze-frame image.

During playback, the JPEG image data which has accumulated in the flash memory is converted to YUV signals, and then in the same way as during monitoring, it is passed through the NTSC encoder, and after D/A conversion is carried out to change the data into a Y/C signal, the data is sent to the LCD panel and displayed.

The two analog signal (Y/C signals) from the ASIC are converted into RGB signals by the LCD driver inside panel, and these RGB signals and the LCD driver inside the panel are used to drive the LCD panel. The RGB signals are 1H transposed so that no DC component is present in the LCD element, and the two horizontal shift register clocks drive the horizontal shift registers inside the LCD panel so that the 1H transposed RGB signals are applied to the LCD panel. Because the LCD closes more as the difference in potential between the COM (common polar voltage: fixed at DC) and the R, G and B signals becomes greater, the display becomes darker; if the difference in potential is smaller, the element opens and the LCD become brighter.

2.2.2.4 Lens Drive Block

The figure below is the lens drive block diagram.

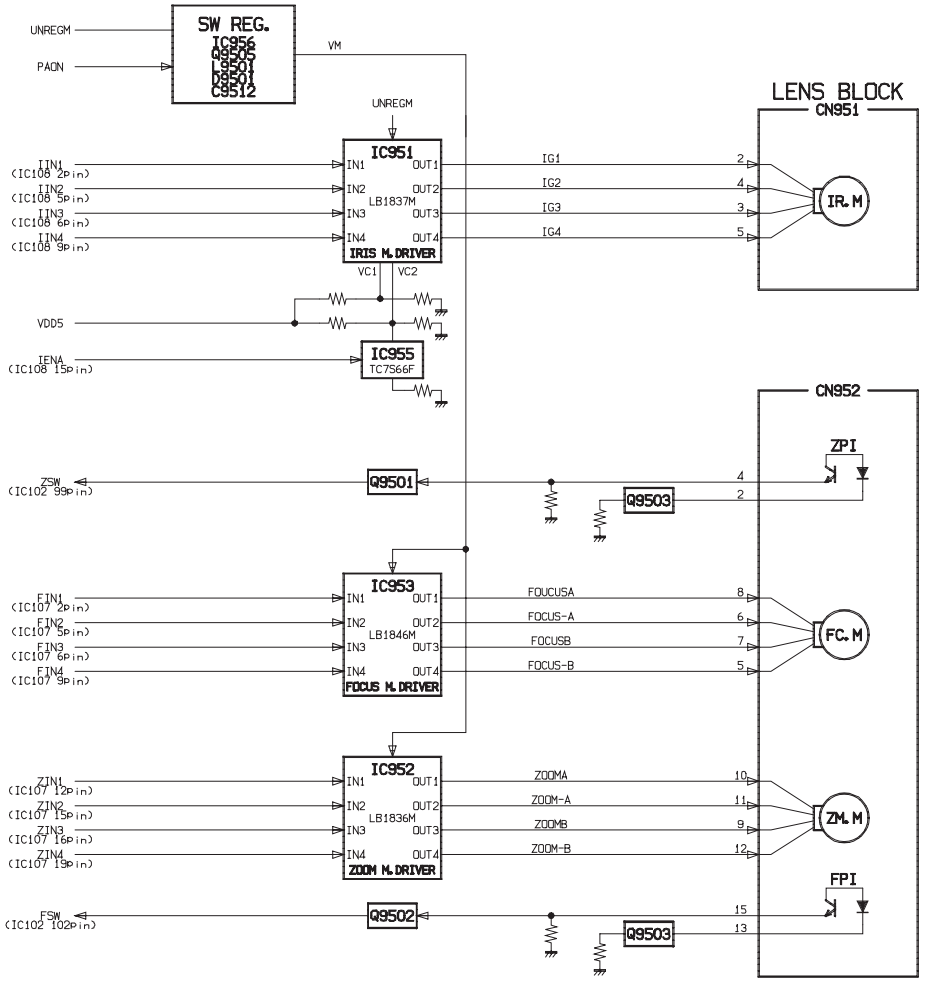


Figure 2-11. Lens Drive Circuit Block Diagram

IRIS AND SHUTTER DRIVE

The iris stepping motor drive signals (IIN1, IIN2, IIN3 and IIN4) which are output from the ASIC expansion port (IC108) are used to drive by the motor driver (IC951), and are then used to drive the iris steps. It can be increased iris steps by IENA control.

FOCUS DRIVE

The focus stepping motor drive signals (FIN1, FIN2, FIN3 and FIN4) which are output from the ASIC expansion port (IC107) are used to drive by the motor driver (IC952). Detection of the standard focusing positions is carried out by means of the photo interrupter (PI) inside the lens block.

ZOOM DRIVE

The zoom stepping motor drive signals (ZIN1, ZIN2, ZIN3 and ZIN4) which are output from the ASIC expansion port (IC107) are used to drive by the motor driver (IC953). Detection of the standard zoom positions is carried out by means of photo reflector (ZPI) inside the lens block.

2.2.3 PW1 Circuit Description

2.2.3.1 Circuit Description

OVERVIEW

The power circuit is mainly composed of the following blocks.

- Switching controller (IC501)
- Digital 5 V and analog system power output (T5001, Q5001)
- Digital 2.5 V system power supply (Q5007)
- Digital 3.35 V system power supply (Q5018)
- LCD system power supply (Q5008, T5002)
- Backlight power supply output (Q5013, T5003)

The figure below is the PW1 electric circuit block diagram.

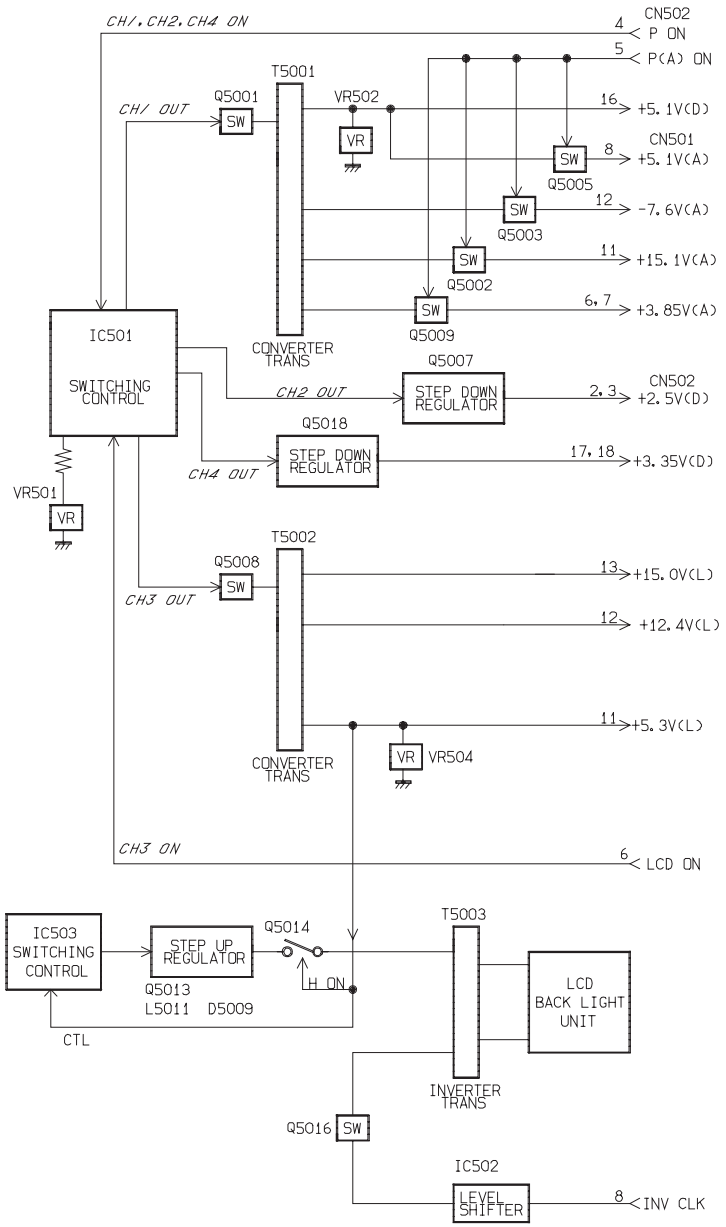


Figure 2-12. PW1 Circuit Block Diagram

SWITCHING CONTROLLER (IC501)

This is the basic circuit which is necessary for controlling the power supply for a PWM-type switching regulator, and is provided with four built-in channels, only CH1 (digital 5 V, analog system), CH3 (LCD system), CH2 (digital 2.5 V) and CH4 (digital 3.35) are used. Feedback from 5 V (D) (CH1), 2.5 V (D) (CH2), 5.3 V (L) (CH3) and 3.35 V (D) (CH4) power supply outputs are received, and the PWM duty is varied so that each one is maintained at the correct voltage setting level.

- ☐ Short-circuit protection circuit
  If output is short-circuited for the length of time determined by the condenser which is connected to Pin (17) of IC501, all output is turned off. The control signal (P ON, P(A) ON and LCD ON) are recontrolled to restore output.

DIGITAL 5 V AND ANALOG SYSTEM POWER OUTPUT

5.1 V (D), 15.1 V (A), -7.6 V (A) and 5.1 V (A) are output. Feedback for the 5.1 V (D) is provided to the switching controller (Pins (29) of IC501) so that PWM control can be carried out.

DIGITAL 2.5 V SYSTEM POWER OUTPUT

2.5 V (D) is output. Feedback is provided to the switching controller (Pin (26) of IC501) so that PWM control can be carried out.

LCD SYSTEM POWER OUTPUT

5.3 V (L), 12.4 V (L) and 15.0 V (L) are output. Feedback for the 5.3 V (L) is provided to the switching controller (Pin (11) of IC501) so that PWM control can be carried out.

DIGITAL 3.35 V POWER OUTPUT

3.35 V (D) is output. Feedback is sent to pins (7) of the switching controller (IC501) for PWM control to be carried out.

SWITCHING CONTROLLER (IC503)

This is the basic circuit which is necessary for controlling the power supply for a PWM-type switching regulator, and is provided with one built-in channel, the control of backlight power supply output to be carried out. Feedback from 7 V (L) power supply outputs are received, and the PWM duty is varied so that each one is maintained at the correct voltage setting level.

BACKLIGHT POWER SUPPLY OUTPUT

7 V (L) is output. Feedback is sent to pins (1) of the switching controller (IC503) for PWM control to be carried out.

INVERTER CONTROL

The backlight uses a 1.8-inch flat picture tube, and is illuminated by controlling T5003 with pulses which are driven by the inverter clock.

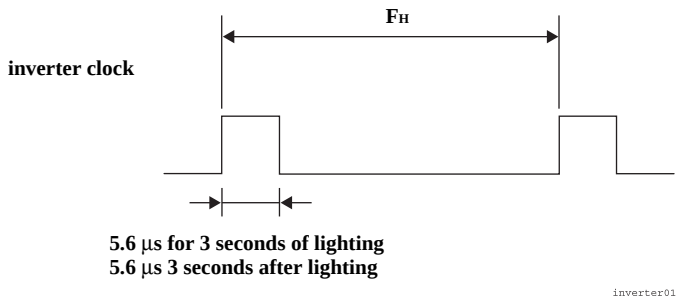


Figure 2-13. Inverter Control

2.2.3.2 Strobe CIrcuit Description

The figure below is the strobe circuit block diagram.

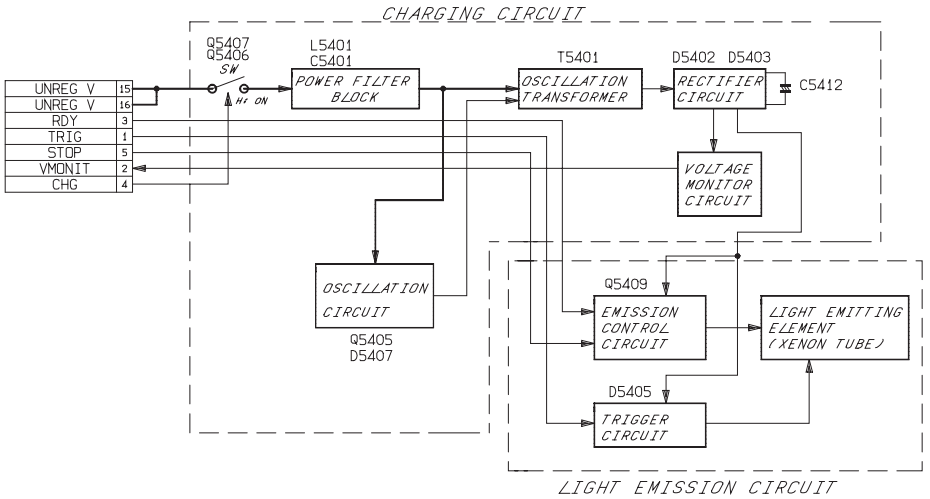


Figure 2-14. Strobe Circuit Block Diagram

CHARGING CIRCUIT

When UNREG power is supplied to the charge circuit and the CHG signal becomes High (3.3 V), the charging circuit starts operating and the main electrolytic capacitor is charged with high-voltage direct current.
However, when the CHG signal is Low (0 V), the charging circuit does not operate.

POWER SWITCH

When the CHG signal switches to Hi, Q5406 turns ON and the charging circuit starts operating.

POWER SUPPLY FILTER

L5401 and C5401 constitute the power supply filter. They smooth out ripples in the current which accompany the switching of the oscillation transformer.

OSCILLATION CIRCUIT

This circuit generates an AC voltage (pulse) in order to increase the UNREG power supply voltage when drops in current occur. This circuit generates a drive pulse with a frequency of approximately 50-100 kHz. Because self-excited light omission is used, the oscillation frequency changes according to the drive conditions.

OSCILLATION TRANSFORMER

The low-voltage alternating current which is generated by the oscillation control circuit is converted to a high-voltage alternating current by the oscillation transformer.

RECTIFIER CIRCUIT

The high-voltage alternating current which is generated at the secondary side of T5401 is rectified to produce a high-voltage direct current and is accumulated at electrolytic capacitor C5412 on the main circuit board.

VOLTAGE MONITORING CIRCUIT

This circuit is used to maintain the voltage accumulated at C5412 at a constance level. After the charging voltage is divided and converted to a lower voltage by R5417 and R5419, it is output to the SY1 circuit board as the monitoring voltage VMONIT. When this VMONIT voltage reaches a specified level at the SY1 circuit board, the CHG signal is switched to Low and charging is interrupted.

LIGHT EMISSION CIRCUIT

When RDY and TRIG signals are input from the ASIC expansion port, the stroboscope emits light.

EMISSION CONTROL CIRCUIT

When the RDY signal is input to the emission control circuit, Q5409 switches on and preparation is made to let current flow to the light emitting element. Moreover, when a STOP signal is input, the stroboscope stops emitting light.

TRIGGER CIRCUIT

When a TRIG signal is input to the trigger circuit, D5405 switches on, a high-voltage pulse of several kilo volts is generated inside the trigger circuit, and this pulse is then applied to the light emitting part.

LIGHT EMITTING ELEMENT

When the high-voltage pulse form the trigger circuit is applied to the light emitting part, current flows to the light emitting element and light is emitted.

Beware of electric shocks.
Special attention is needed because high voltage is generated around C5412 and xenon lamp terminals.

2.2.4 SY 1 Circuit Description

2.2.4.1 Configuration and Functions

For the overall configuration of the SY1 circuit board, refer to the block diagram below.

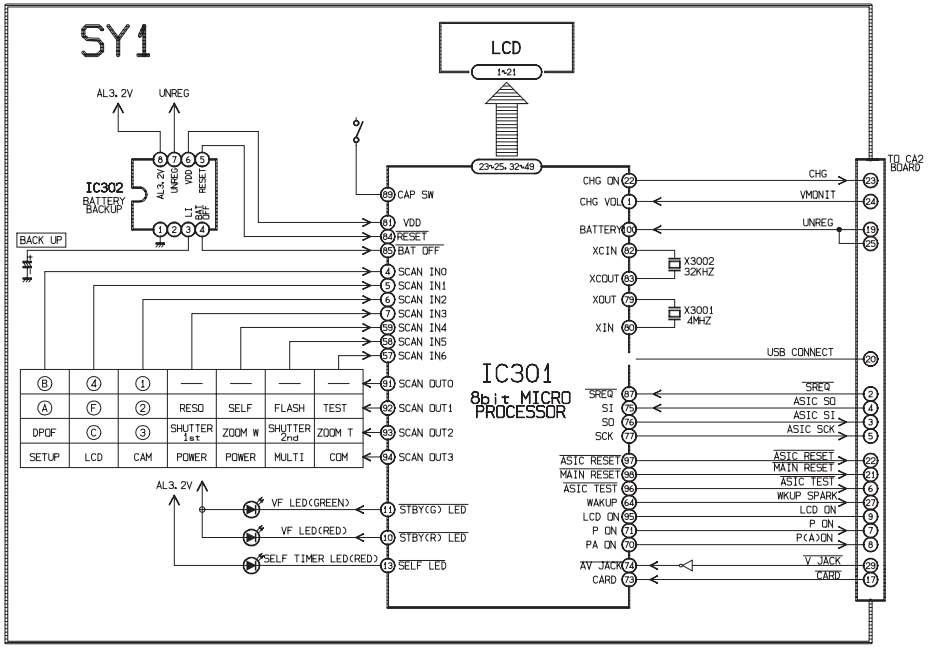


Figure 2-15. SY1 Circuit Board Block Diagram

The configuration of the SY1 circuit board centers around a 8-bit microprocessor (IC301). The 8-bit microprocessor handles the following functions:1. Operation key input, 2. Mode LCD display, 3. Clock control, 4. Power ON/OFF, 5. Strobe charge control.

Table 2-3. 8bit Micro Processor Pin Configuration

Pin	Signal	I/O	Outline
1	CHG VOL	I	Strobe charge voltage input (analog input)
2-3	NOT USED	-	--
4-7	SCAN IN 0-3	I	Key matrix input
8	AVDD	-	A/D converter analog power terminal
9	AVREF	I	A/D converter standard voltage input terminal
10	$\overline{\text{STBY (R) LED}}$	O	Standby LED (red) $\overline{\text{ON}}$/OFF signal L: LED light
11	$\overline{\text{STBY (G) LED}}$	O	Standby LED (green) $\overline{\text{ON}}$/OFF signal L: LED light
12	VSS	-	GND
13	$\overline{\text{SELF LED}}$	O	Self-timer LED $\overline{\text{ON}}$/OFF signal L: LED light
14-19	NOT USED	-	--
20	$\overline{\text{AVREF ON}}$	O	A/D standard voltage $\overline{\text{ON}}$/OFF signal L: ON
21	NOT USED	-	--
22	CHG ON	O	Flash charge ON/ $\overline{\text{OFF}}$ signal H: ON
23-25	COM1-3	O	Model LCD common signal output
26	NOT USED	-	--
27	BIAS	-	LCD motor voltage supply terminal
28-30	VLC0-2	-	LCD motor voltage terminal
31	VSS	-	GND
32-49	S1-18	O	Model LCD segment signal output
50-56	NOT USED	-	--
57-59	SCAN IN 4-6	I	Key matrix input
60-63	NOT USED	-	--
64	WAKE UP	O	Wake up output signal
65-68	NOT USED	-	--
69	$\overline{\text{BACK UP CTL}}$	O	Backup battery charge ON/OFF signal

Table 2-3. 8bit Micro Processor Pin Configuration

Pin	Signal	I/O	Outline
70	PA ON	O	DC/DC converter (analog) ON/ $\overline{\text{OFF}}$ signal H: ON
71	P ON	O	DC/DC converter ON/ $\overline{\text{OFF}}$ signal H: ON
72	NOT USED	-	--
73	CARD	I	Extension memory card attachment detection signal L: Attachment
74	AV JACK	I	Video output cable connection detection signal H: Connection
75	SI	I	Serial communication data input (←ASIC)
76	SO	O	Serial communication data output (→ASIC)
77	SCK	O	Serial communication clock output (→ASIC)
78	IC	-	Connect to VSS
79	XOUT	O	Main clock oscillation terminal (4 MHz)
80	XIN	I	Main clock oscillation terminal
81	VDD	-	Power supply terminal
82	XCIN	I	Sub clock oscillation terminal (32.768 kHz)
83	XCOUT	O	Sub clock oscillation terminal
84	$\overline{\text{RESET}}$	I	Reset input
85	$\overline{\text{BAT OFF}}$	I	Battery OFF detection signal L: OFF
86	NOT USED	-	--
87	SREQ	I	Serial communication request signal L: Request
88	$\overline{\text{USB}}$	I	USB connector connection detection signal L: connection
89	CAP SW	I	Lens cap switch L: Attachment
90	NOT USED	-	--
91-94	SCAN OUT 0-3	O	Key matrix output
95	LCD ON	O	LCD monitor power ON/ $\overline{\text{OFF}}$ signal H: ON

Table 2-3. 8bit Micro Processor Pin Configuration

Pin	Signal	I/O	Outline
96	ASIC TEST	O	ASIC reset control signal
97	ASIC RESET	O	ASIC reset signal L: Reset output
98	$\overline{\text{MAIN RESET}}$	O	SPARC reset signal L: Reset output
99	AVSS	-	A/D converter GND power terminal
100	BATTERY	I	Battery voltage input (analog input)

2.2.4.2 Internal Communication Bus

The SY1 circuit board carries out overall control of camera operation by detecting the input from the keyboard and the condition of the camera circuits. The 8-bit microprocessor reads the signals from each sensor element as input data and outputs this data to the camera circuits (ASIC) or to the LCD display device as operation mode setting data. Figure 2-16 shows the internal communication between the 8-bit microprocessor, ASIC and SPARC lite circuits.

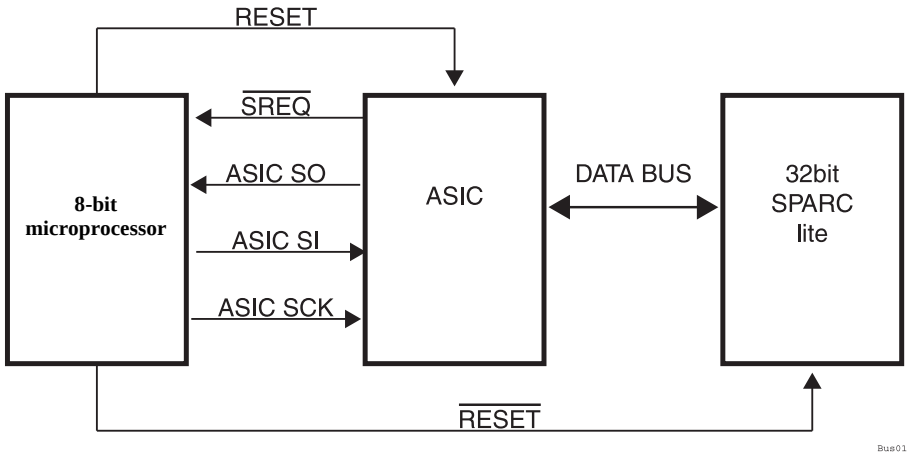


Figure 2-16. Internal Bus Communication System

2.2.4.3 Power Supply Control

The 8-bit microprocessor controls the power supply for the overall system.

The following is a description of how the power supply is turned on and off. When the battery is attached, a regulated 3.2 V is normally input to the 8-bit microprocessor (IC301) by IC302, so that clock counting and key scanning is carried out even when the power switch is turned off, so that the camera can start up again. When the battery is removed, the 8-bit microprocessor operates in sleep mode using the backup capacitor. At this time, the 8-bit microprocessor only carries out clock counting, and waits in standby for the battery to be attached again. When a switch is operated, the 4-bit microprocessor supplies power to the system as required.

The 8-bit microprocessor first sets both the P ON signal at pin (71) and the PA ON signal at pin (70) to high, and then turns on the DC/DC converter. After this, High signals are output from pins (97) and (88) so that the ASIC and the SPARC lite are set to the active condition. If the LCD monitor is on, the LCD ON signal at pin (95) set to high, and the DC/DC converter for the LCD monitor is turned on. Once SPARC lite processing is completed, the ASIC and the SPARC lite return to the reset condition, all DC/DC converters are turned off and the power supply to the whole system is halted.

Table 2-4. Camera Mode (Battery Operation)

		SPARC Lite	ASIC memory	CCD	8bit CPU	MODE LCD	LCD MONITOR
Supply voltage		3.3V	3.3V	5V(A), +15V, -9V	3.2V (ALWAYS)	3.2V (ALWAYS)	5V(L) +12V etc.
Power OFF		OFF	OFF	OFF	32KHz	OFF	OFF
Power ON	Play back	ON	ON	OFF	4MHz	ON	ON
	Power SW On-Auto power down	OFF	OFF	OFF	4MHz	ON	OFF
	Shutter SW ON	ON	ON	ON→OFF	4MHz	ON	OFF
	Resolution, Flash, Self timer SW ON	OFF	OFF	OFF	4MHz	ON	OFF
	LCD finder	ON	ON	ON	4MHz	ON	ON

Table 2-5. Host Mode (Battery Operation)

		SPARC Lite	ASIC memory	CCD	8bit CPU	MODE LCD	LCD MONITOR
Supply voltage		3.3V	3.3V	5V(A), +15V,-9V	3.2V(ALWAYS)	3.2V(ALWAYS)	5V(L)+12V etc.
Power OFF		OFF	OFF	OFF	32KHz	OFF	OFF
Power ON	Power SW On-AUTO power down	OFF	OFF	OFF	4MHz	ON	OFF
	Take a picture	ON	ON	ON→OFF	4MHz	ON	OFF
	Erase image	ON	ON	OFF	4MHz	ON	OFF
	Download image	ON	ON	OFF	4MHz	ON	OFF
	Continuous image	ON	ON	ON	4MHz	ON	OFF
	Massage from host	ON	ON	ON	4MHz	ON	OFF

NOTE: *P.SAVE=Power save mode, 4MHz=Main clock operation, 32KHz=Sub clock operation.*

CHAPTER

3

TROUBLESHOOTING

3.1 Overview

PhotoPC 3100Z does not have error indication such as LCD and LED. Perform the following repairing method according to the symptoms. Even when the symptoms look the same, there are various reasons for the trouble. Check the troubleshooting points described in this chapter and perform the best repairing method.

- **Before disassembling the camera, remove the battery and plug off the AC adapter.**
- **The electrolytic capacitor (C5412) mounted on PW1 board is for flash strobe and set to be charged automatically whenever the power is ON. Due to this, it may cause electric shock during the service procedure. When repairing, be sure to discharge the camera, using the cement resistance. (See Ch4 for details.)**

3.1.1 LED Indication on Various Conditions

PhotoPC 3100Z always supervises the condition of its components and indicates the condition by VF side lamp (red/ green LED). (See “LED Indication on Various Conditions” on page 58.)

Table 3-1. LED Indication on Various Conditions

Conditions	VF side lamp (red/green LED)	VF side lamp (red/green LED)	Note
Ready to take picture		ON	
Focusing		Blink (0.2 sec. interval)	
Focus lock		ON	
CF writing	Blink (0.5 sec. interval)		
Battery warning	Blink (1 sec. interval)		With control panel indication
Error	ON		
Self timer ON		ON	• Front side red LED -First 8 sec: low speed blinking (0.5 sec. interval) -Last 2 sec: high speed blinking (0.2 sec. interval) • With control panel indication
Video mode		Blink (0.1 sec. interval)	
Applying the power (standby)		Blink (0.2 sec. interval)	
Lens cap on		Blink (0.2 sec. interval)	
CF is not installed		Blink (0.2 sec. interval)	

3.2 Troubleshooting

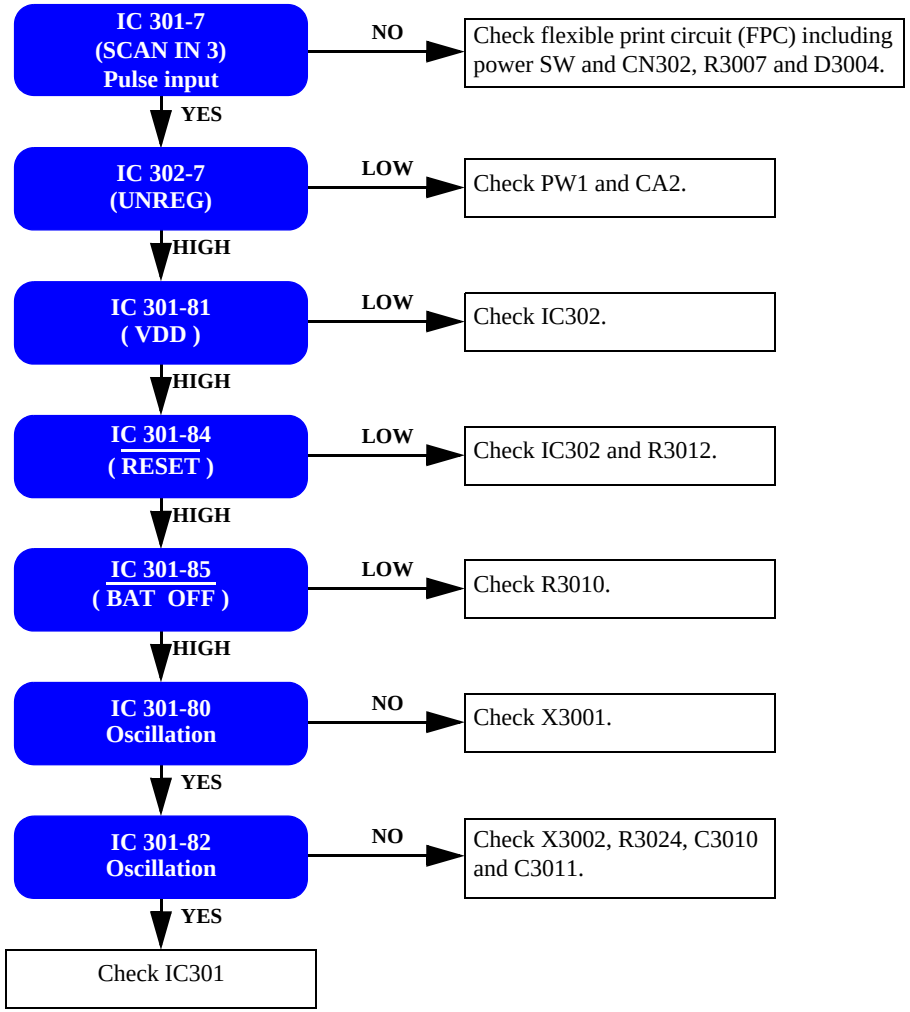
This section describes how to check the defective unit and parts according to its symptoms.

After installing the battery or installing the AC adapter, if LCD is not indicated or if the red LED continues blinking and does not move on to the standby condition, see the following tables that give you checking points and solutions.See the following flow charts.

ADJUSTMENT REQUIRED

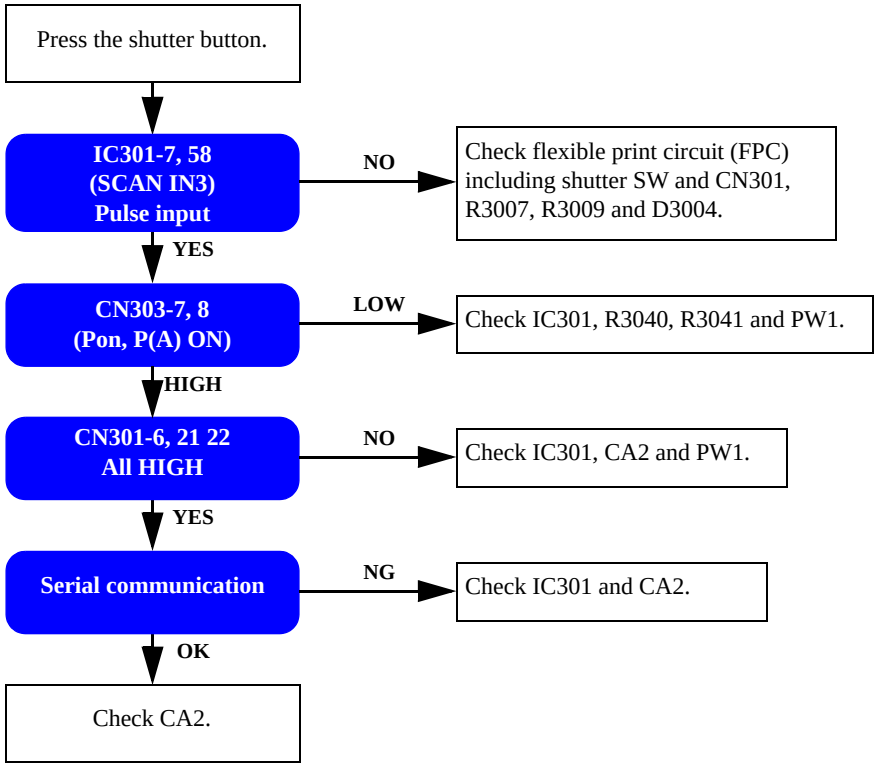
- **If any errors occurred on the 8 bit micro computer on SY1 board, which controls the user interface, it cannot output commands to generate the various digital and analog power and the camera becomes “power cannot be applied” condition.**
- **8-bit micro computer performs serial communication with CPU on CA2 board. Same error will be generated if any errors occurred on CA2 board.**

3.2.1 Check and remedy when the power cannot apply



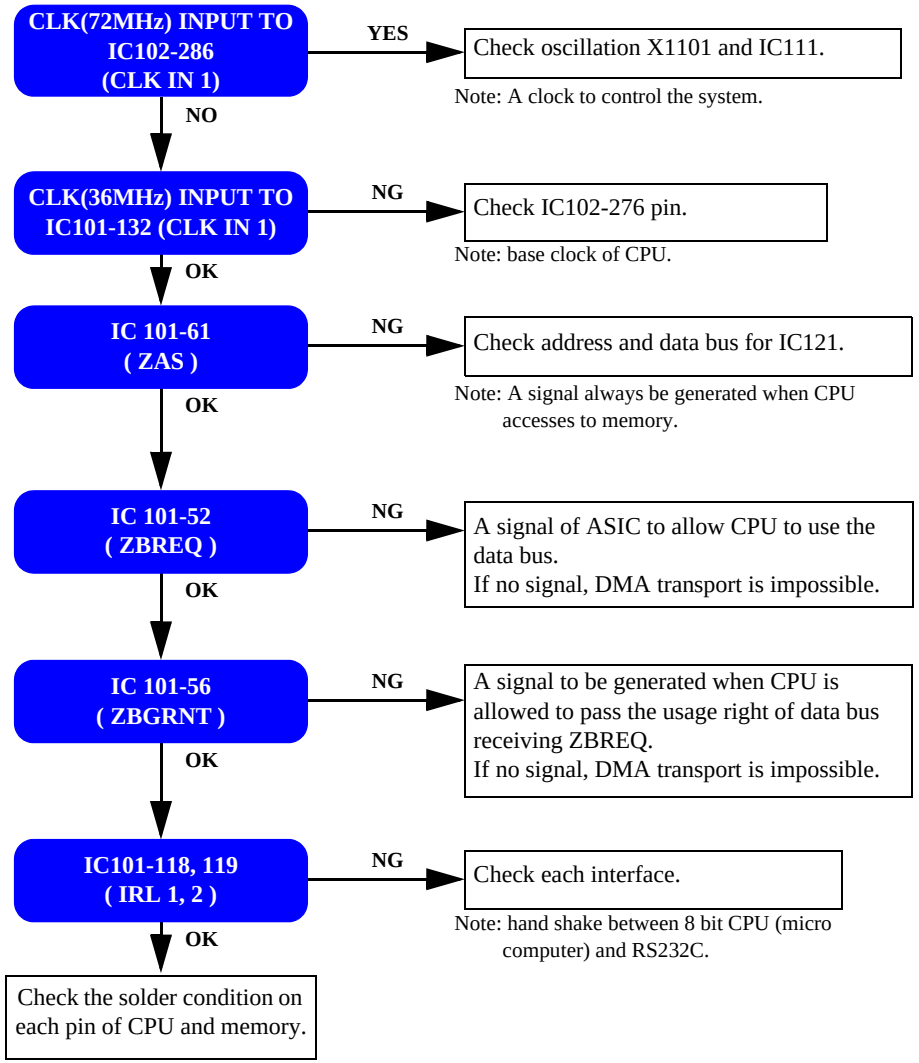
Flowchart 3-1. Cannot apply power

3.2.2 Check and remedy when the shooting picture is impossible



Flowchart 3-2. Cannot Shoot a Picture

3.2.3 Check and remedy when the taking in pictures is impossible


CLK(72MHz) INPUT TO IC102-286 (CLK IN 1)
YES
Check oscillation X1101 and IC111.
Note: A clock to control the system.
NO
CLK(36MHz) INPUT TO IC101-132 (CLK IN 1)
NG
Check IC102-276 pin.
Note: base clock of CPU.
OK
IC 101-61 (ZAS)
NG
Check address and data bus for IC121.
Note: A signal always be generated when CPU accesses to memory.
OK
IC 101-52 (ZBREQ)
NG
A signal of ASIC to allow CPU to use the data bus.
If no signal, DMA transport is impossible.
OK
IC 101-56 (ZBGRNT)
NG
A signal to be generated when CPU is allowed to pass the usage right of data bus receiving ZBREQ.
If no signal, DMA transport is impossible.
OK
IC101-118, 119 (IRL 1, 2)
NG
Check each interface.
Note: hand shake between 8 bit CPU (micro computer) and RS232C.
OK
Check the solder condition on each pin of CPU and memory.

Flowchart 3-3. Cannot Take in Picture.

CHAPTER

4

DISASSEMBLY AND ASSEMBLY

4.1 Overview

This section describes procedures for disassembling the main components of the product. Unless otherwise specified, disassembly units or components can be reassembled by reversing the disassembly procedure. Things, if not strictly observed, that could result in injury or loss of life are described under the heading “Warning”. Precautions for any disassembly or assembly procedures are described under the heading “CAUTION”. Chips for disassembling procedures are described under the heading “CHECK POINT”.
If the assembling procedure is different from the reversed procedure of the disassembling, the procedure is described under the heading “REASSEMBLY”.
Any adjustments required after disassembling the units are described under the heading “ADJUSTMENT REQUIRED”. When you have to remove any units or parts that are not described in this chapter, refer to the exploded diagrams in the appendix.

Read precautions described in the next section before starting.

4.1.1 Precautions

See the precautions given under the handling “WARNING” and “CAUTION” in the following column when disassembling or assembling the product.

- **Remove the batteries and plug off the AC adapter before disassembling the camera. In case of necessity to measure the voltage, however, pay a sufficient attention to avoid an electric shock by following the procedures in this manual.**
- **Whenever to disassemble the camera, make sure to wear gloves.**
- **When a lithium battery is installed on the main board of this camera, make sure to observe the following instructions when serving the battery:**
  1. Keep the battery away from any metal or other batteries so that electrodes of the opposite polarity do not come in contact with each other.
  2. Do not heat the battery or put it near fire.
  3. Do not solder on any part of the battery. (Doing so may result in leakage of electrolyte from the battery, burning or explosion. The leakage may affect other devices close to the battery.)
  4. Do not charge the battery. (An explosion may be generated inside the battery, and cause burning or explosion.)
  5. Do not dismantle the battery. (The gas inside the battery may hurt your throat. Leakage, burning or explosion may also be resulted.)
  6. Do not install the battery in the wrong direction. (This may cause burning or explosion.)
- **Danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacture. Dispose the used batteries according to government’s law and regulations.**

WARNING

- To protect sensitive microprocessors and circuitry, use static discharge equipment, such as anti-static wrist straps, when accessing internal components.
- The electrolytic capacitor (C5412) mounted on PW1 board is for flash strobe and set to be charged automatically whenever the power is ON. Due to this, it may cause electric shock during the service procedure. When repairing, be sure to discharge the camera, using the cement resistance.

CAUTION

- For this product, there are two repair levels; first maintenance and 2nd maintenance. The service for second maintenance is allowed to be done only by the service center equipped with special instruments for adjustment. We do not guarantee the repair result performed by the others.
- See Table 4-3 to categorize between the 1st maintenance and the 2nd maintenance.(See page -65)
- Use the special package for transportation.
- Use only recommended tools for disassembling, assembling or adjusting the camera.
- Observe the specified torque when tightening screws.

4.1.2 Discharging Electrolytic Capacitor

WARNING

When repairing, be sure to discharge the electrolytic capacitor for flash on PW1 if PW1 would be exposed (the process after disassembling the front cabinet).

The following is the discharging process of main electrolytic capacitor (C5412) on PW1. If you skip this operation, there is a great possibility of electric shock during the disassembling procedure.

1. Prepare the cement resistance with more than 560Ω/10W.
2. Contact 2 lead wires to the soldering cotton on the both poles of electrolytic capacitor. (No polarity at this stage.)

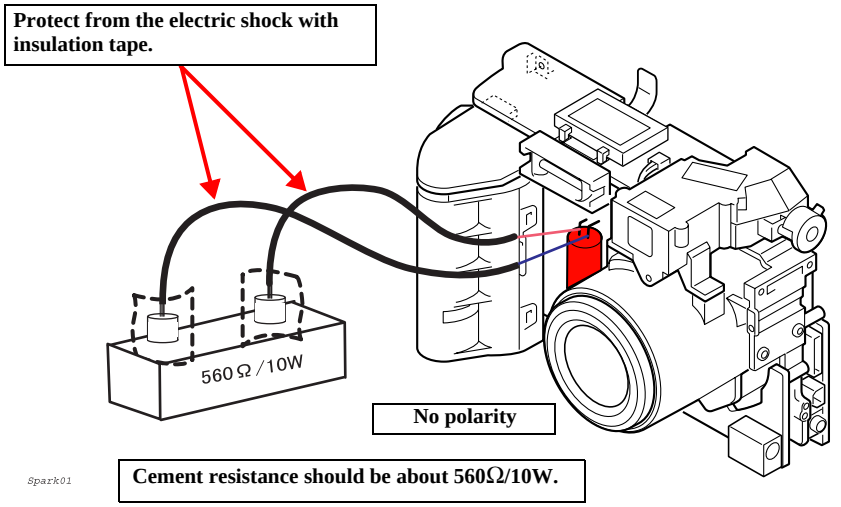


Figure 4-1. Discharging Electrolytic Capacitor

4.1.3 Tools

The following tables explain the tools needed for repairing service.

Table 4-1. Tools

No.	Name		Note
1	Color Viewer 5100 K	×	103058400
2	DscCal V122 adjustment program	×	Issued with this manual.
3	Fine driver (+)	○	
4	Siemens star chart	×	Attached on this manual appendix.
5	Color adjustment chart	○	104268100
7	Soldering device	○	B740200100
7	Tweezers	○	B741000100

○: available in the market, ×: not available in the market.

CAUTION

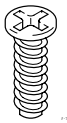
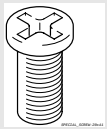
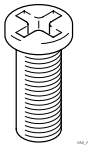
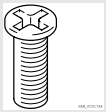
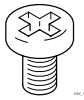
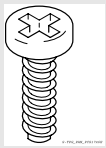
- **Adjustment can be done by PC/AT compatible machine with 80486 mounted: Not by Mac. PC.**
- **AWB adjustment for PhotoPC 3100Z may take time and host PC time out error may be occurred accordingly. Adjustment program Dsc Calibration is made to counter this problem. You can also adjust other previous models by this program.**

4.1.4 Screws

Table 4-2.

Ref. No.	Screw Type / Specification	Appearance
101	SCR S-TP PAN PCS 1.7X5.0	
102	SCR S-TPG PAN PCS 1.7X3	

Table 4-2.

Ref. No.	Screw Type / Specification	Appearance
103	SCR S-TPG PAN PCS 1.7X5	
104	SPECIAL SCREW-2.0X4.1	
105	SCR PAN PCS 2X5	
106	SPECIAL SCREW-1.4X2.0	
107	SCR PAN PCS 1.7X3	
108	SCR PAN PCS 1.7X4	
109	SCR PAN PCS 1.7X2.5F	
110	SCR S-TPG PAN PCS 1.7X6E	

4.1.5 Overview

Table 4-3. 1st / 2nd Level Maintenance (at Board Replacement)

No.	Replacing Parts	Adjustment Items	Category
1	CA1 Board	1. Initial operation 2. Lens adjustment 3. AWB adjustment 4. Color matrix adjustment 5. CCD defect detect adjustment 6. LCD panel adjustment **Note: Observe the order.**	2nd maintenance
2	CA2 Board	1. Initial operation 2. Lens adjustment 3. AWB adjustment 4. Color matrix adjustment 5. CCD defect detect adjustment 6. CCD Black Defect Adjustment 7. LCD panel adjustment **Note: Observe the order.** Register the USB storage information.	2nd maintenance
3	Lens assembly	1. Lens adjustment 2. AWB adjustment 3. Color matrix adjustment 4. CCD defect detect adjustment 5. CCD Black Defect Adjustment **Note: Observe the order.**	2nd maintenance
4	CCD	Same as lens assembly.	2nd maintenance

Table 4-3. 1st / 2nd Level Maintenance (at Board Replacement)

No.	Replacing Parts	Adjustment Items	Category
5	LCD (monitor)	LCD panel adjustment 1. LCD H AFC adjustment 2. LCD RGB Offset adjustment 3. LCD Gain adjustment 4. LCD Blue Brightness adjustment 5. LCD Red Brightness adjustment **Note: Observe the order.**	1st maintenance
6	SY1 Board	Note: When replacing the terminals on SY1 board, perform the following adjustment. (2nd maintenance) Observe the order except for the LCD panel adjustment. 1. Lens adjustment 2. AWB adjustment 3. Color matrix adjustment 4. CCD defect detect adjustment	1st maintenance
7	PW1 Board	Note: When replacing the terminals on PW1 board, perform the following adjustment. (2nd maintenance) Observe the order except for the LCD panel adjustment. 1. IC501 oscillation frequency adjustment 2. 5.1V (D) voltage adjustment 3. 12.4V (L) voltage adjustment 1 4. Lens adjustment 5. AWB adjustment 6. Color matrix adjustment 7. CCD defect detect adjustment	1st maintenance

4.2 Disassembly

The flowchart below shows the disassembling procedure.

WARNING

The electrolytic capacitor (C5412) mounted on PW1 board is for flash strobe and set to be charged automatically whenever the power is ON. Due to this, it may cause electric shock during the service procedure. When repairing, be sure to discharge the camera, using the cement resistance. (See "Discharging Electrolytic Capacitor" on page 63)

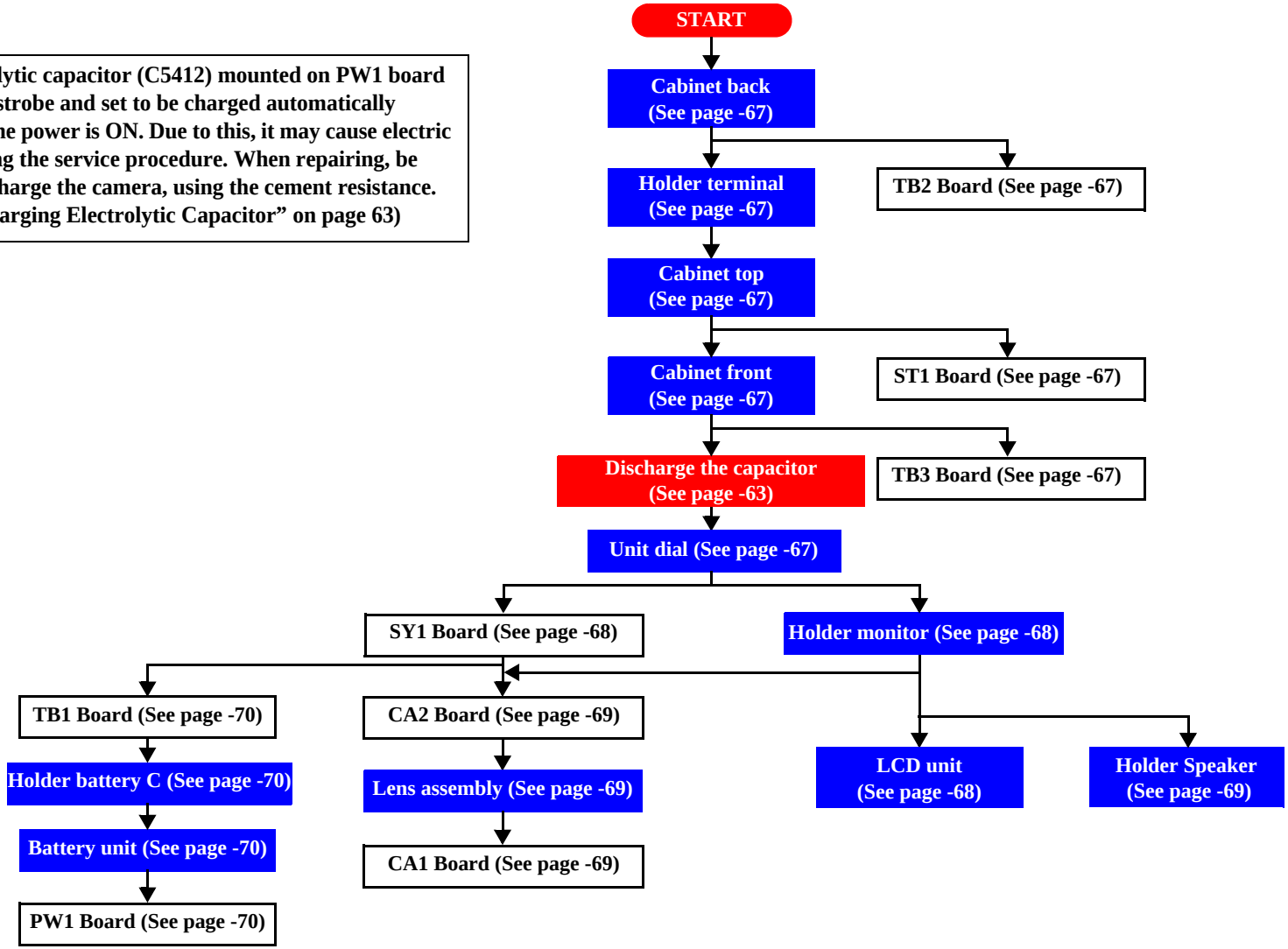

START
Cabinet back (See page -67)
Holder terminal (See page -67)
TB2 Board (See page -67)
Cabinet top (See page -67)
Cabinet front (See page -67)
ST1 Board (See page -67)
Discharge the capacitor (See page -63)
TB3 Board (See page -67)
Unit dial (See page -67)
SY1 Board (See page -68)
Holder monitor (See page -68)
TB1 Board (See page -70)
CA2 Board (See page -69)
LCD unit (See page -68)
Holder Speaker (See page -69)
Holder battery C (See page -70)
Lens assembly (See page -69)
Battery unit (See page -70)
CA1 Board (See page -69)
PW1 Board (See page -70)

Figure 4-2. Disassembling Flowchart

4.2.1 Cabinet Back / Front, TB2/3, ST1 Board Removal

This section explains the disassembling of the cabinet (front / back), TB2/3 board and ST1 board. Disassembling procedure should follow numbers indicated in the figure below.

The blue oblique letters in the figure show the tightening torque.

Approximate flow of the disassembling process is floowing.

Cabinet back

Note: There is a flat cable.

Holder terminal (Side cover at I/O side)

Cabinet top

Note: There are two hooks in front of Cabinet top and not easy to detach. It becomes easier to detach Cabinet top if lifting Unit dial from the convex part under the screw when removing the screws of Unit dial.

Cabinet front

Note: There is a flat cable.

Discharging Electrolytic capacitor

Note:See "Discharging Electrolytic Capacitor" on page 63)

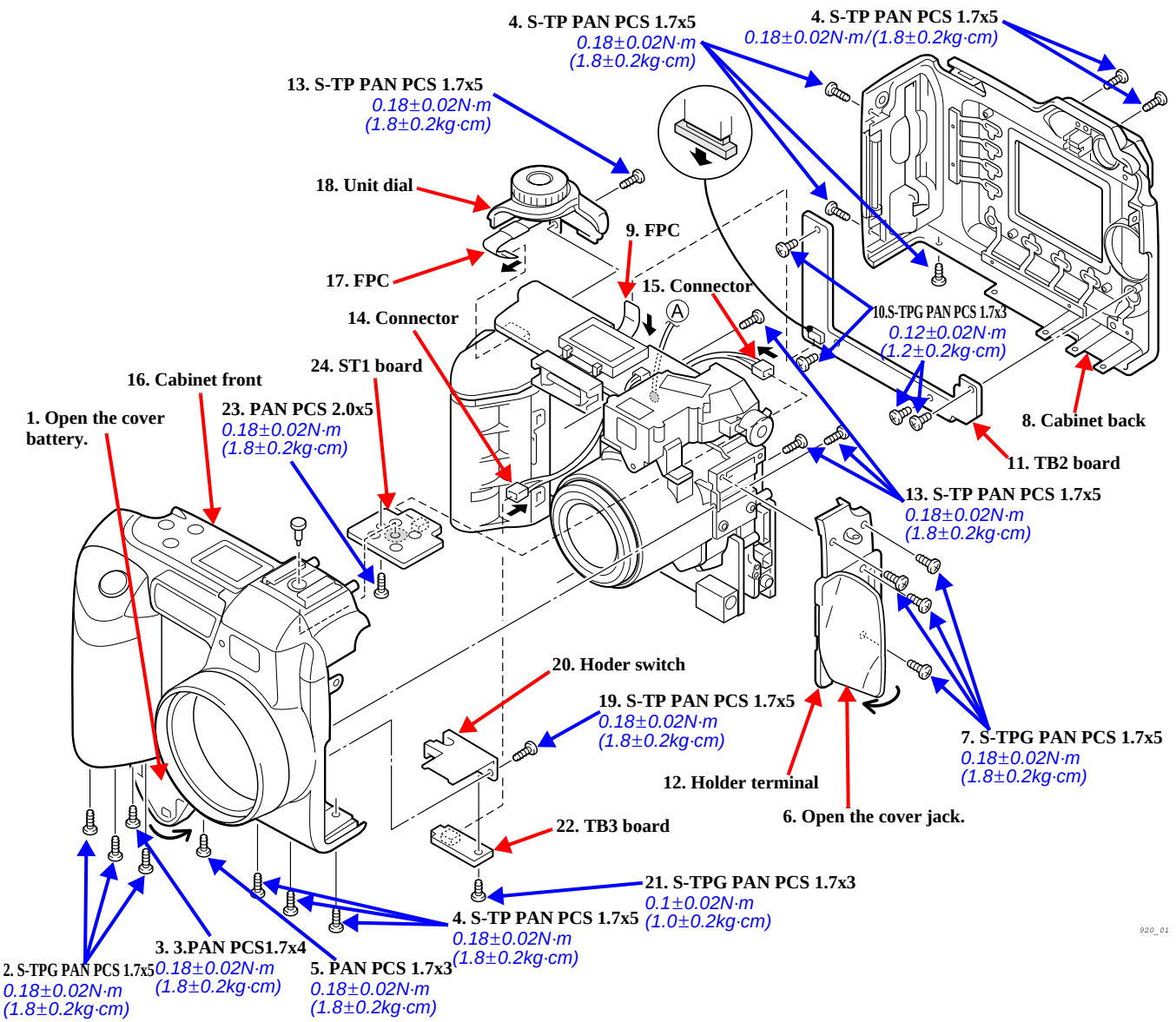


Figure 4-3. Removal of Cabinet Back, Cabinet Front, TB2 Board, TB3 Board and ST1 Board

4.2.2 Removal of SY1 and LCD

The following is the discharging process of SY1 and LCD. Disassembling procedure should follow numbers indicated in the figure below.

The blue oblique letters in the figure show the tightening torque.

CAUTION

Since the date backup battery is adhered to SY1 board, it is impossible to replace independently. (must be replaced as SY1 board)

CHECK POINT

When replacing SY1 board, since its front is fixed by the flash part, remove the connectors of SY1 and CA2 boards first and lift its back to replace SY1.

ADJUSTMENT REQUIRED

When replacing the LCD, perform the LCD panel adjustment. (See Ch5.)

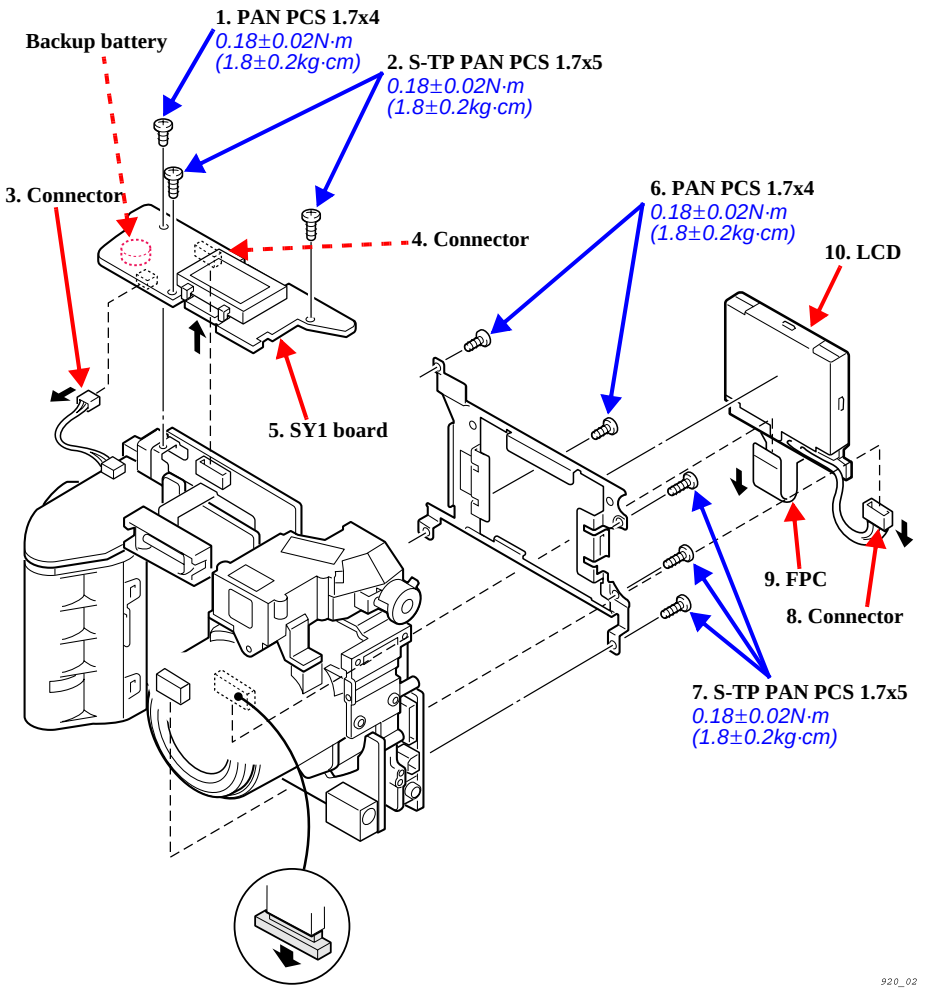


Figure 4-4. Removal of SY1 and LCD

4.2.3 Removal of CA1/2 Board and Lens Assembly

The following is the discharging process of CA1 Board, CA2 Board and Lens assembly. Disassembling procedure should follow numbers indicated in the figure below.

The blue oblique letters in the figure show the tightening torque.

ADJUSTMENT REQUIRED

When replacing the CA1 board, CA2 board, or lens assembly, perform the adjustment. (See Ch5.)

CAUTION

- **Never disassemble Optical assembly which must be replaced by a unit.**
- **Be careful at its direction when installing the optical filter of the lens assembly. (See "Assembly" on page 71.)**

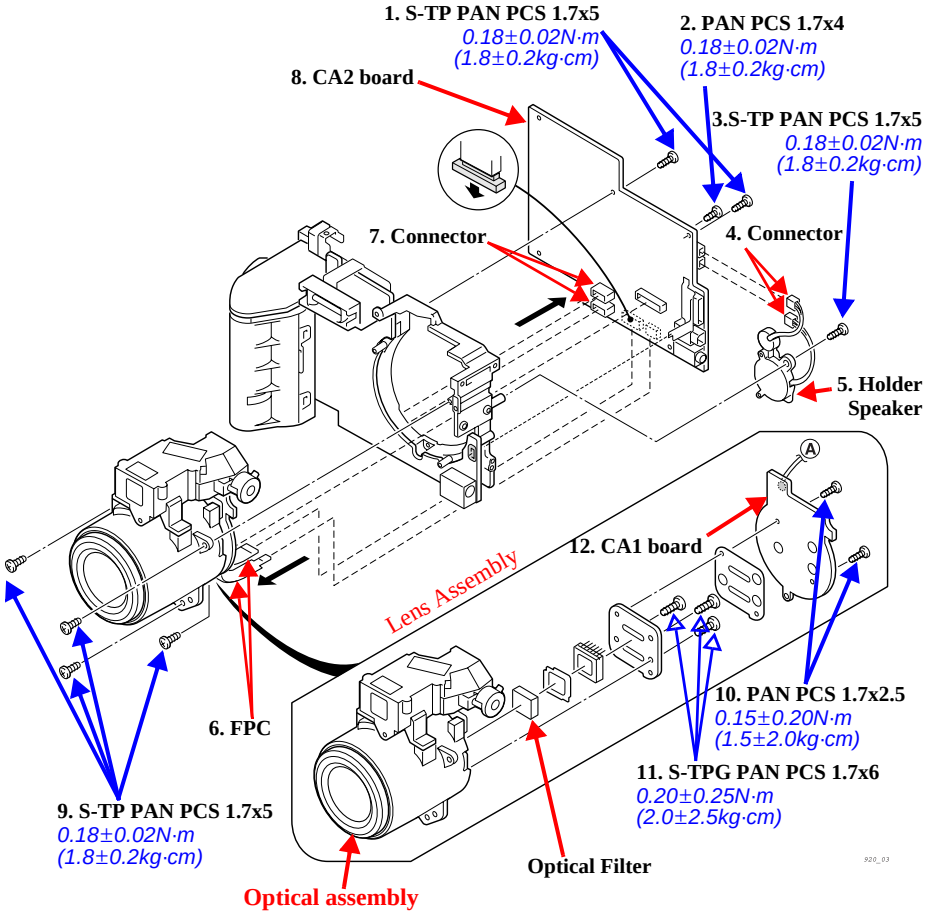


Figure 4-5. Removal of CA1, CA2 and Lens Assembly

4.2.4 Removal of Holder Battery and PW1 Board

The following is the discharging process of holder battery and PW1 board.
Disassembling procedure should follow numbers indicated in the figure below.

The blue oblique letters in the figure show the tightening torque.

ADJUSTMENT REQUIRED

When replacing the PW1 Board, perform adjustment. (See Ch5.)

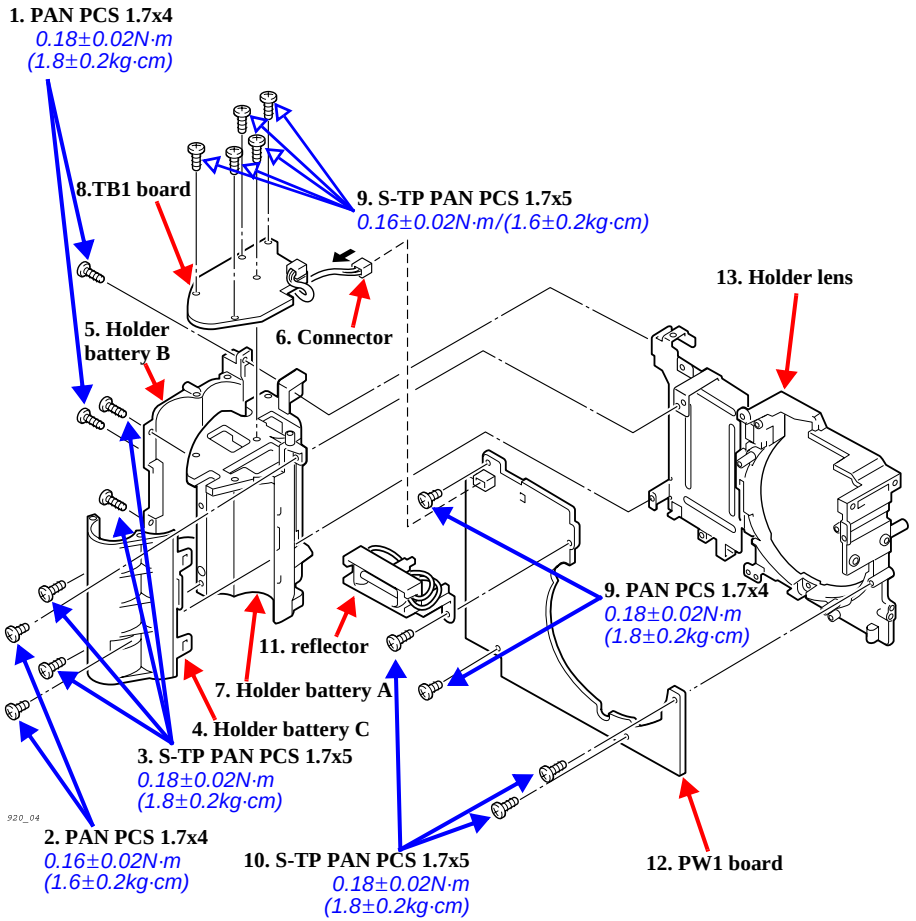


Figure 4-6. Removal of Holder Battery and PW1 Board

4.3 Assembly

4.3.1 Assembling the Lens Assembly

1. Check if there is no dust or scratch on the surface of the Optical Filter (2) and install it toe the LENS ASSY (1).

CAUTION

- **Never disassemble Optical assembly which must be replaced by a unit.**
- **Be careful at the direction when installing the Filter.**

2. Insert the SPACER (3).
3. Remove the protective sheet of CCD (4) and check if there is no dust or scratches on the surface and install the CCD, aligning with guide rib of the holder.
4. Install the MOUNTING LENS (5), aligning with guide pin of the holder and secure it with 3 screws (6) (1.7x6).
5. Install the SPACER INSULATOR (7), aligning the guide pin of the holder.
6. Attach the PAD (10) to the Lens.
7. Install the CA1 (8) holder, aligning with the guide pin and the CCD terminal and secure it to the MOUNTING LENS with 2 screws (9) (1.7x2.5).
8. Solder the CCD terminal to the CA1.

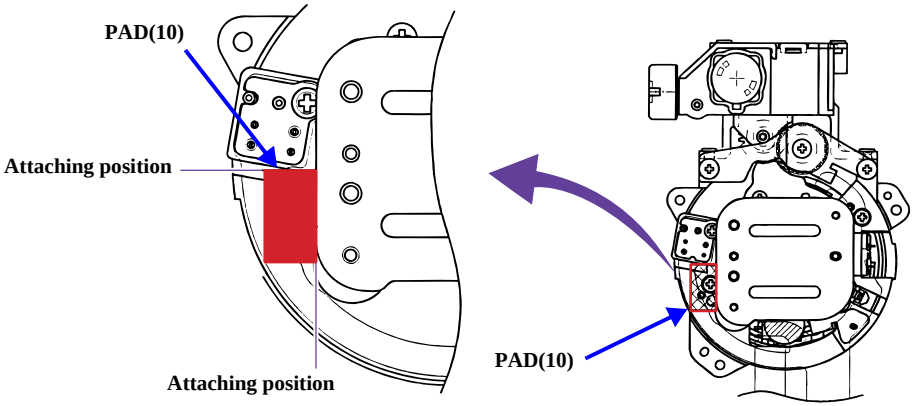


Figure 4-7. Installing the PAD

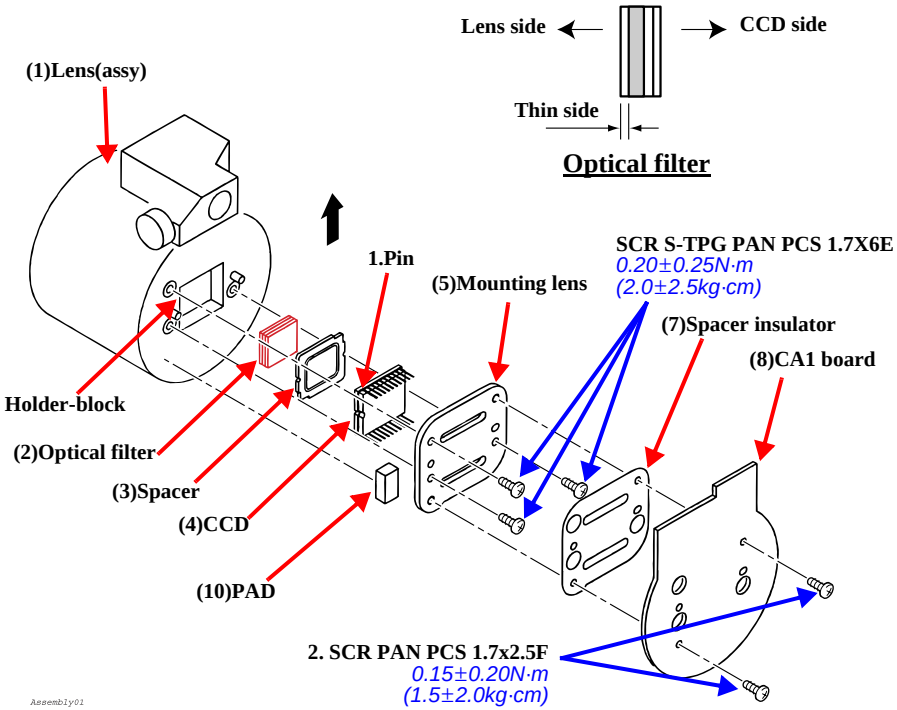


Figure 4-8. Assembling the Lens Assembly

4.3.2 Installing the SY1 Board

1. Insert the connector of ASSY, WIRE (2) to the SY1 board (1).
2. Connect the connector CN303 of SY1 board to the connector CN106 of the CA2 board. Secure it with 2 screws (1.7x5).
3. Connect the harness from the TB1 board to the connector CN301 of the SY1 board.

CHECK POINT

Do the following preparation so that the harnesses would not interfere with the shutter operation.

- **Set the harness from the TB1 board to the same height with connector CN302 of the SY1 board and strain it a little bit.**
- **The core of the harness from the TB1 should be pressed and secured under the super capacitor C3001.**

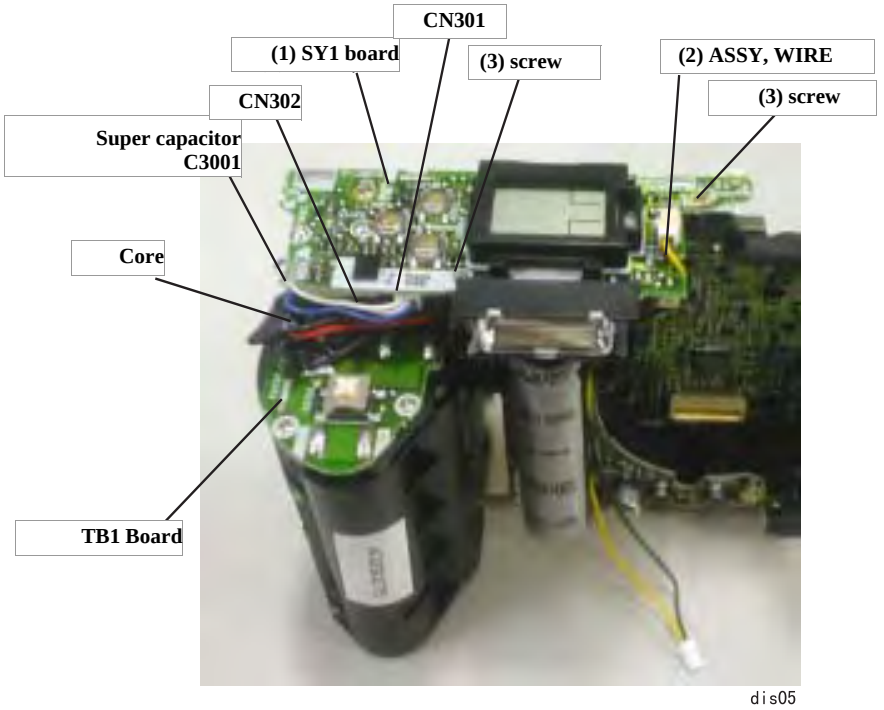


Figure 4-9. Installing the SY1 Board

*tightening torque

0.18±0.02N·m
(1.8±0.2kg·cm)

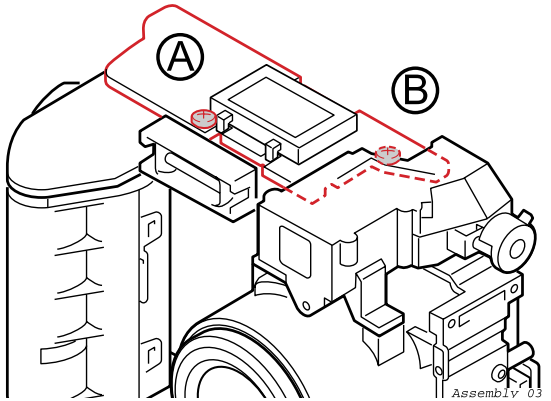


Figure 4-10. Installing the SY1 Board

4.3.3 Installing the CABINET TOP

1. Install the ST1 board (1) to the CABINET TOP and secure it with 1 screw (2) (2.0x5).
2. Connect the pin to ST1 board.

CHECK POINT

- **Hold the pin when soldering the pin so that the pin does not get off. (See Figure 4-11.)**
- **When soldering the pin, be sure that the soldering part is shorter than the length of pin. (See Figure 4-11.)**

3. Secure the CABINET TOP to the CABINET FRONT with 3 screws (3) (1.7x5).

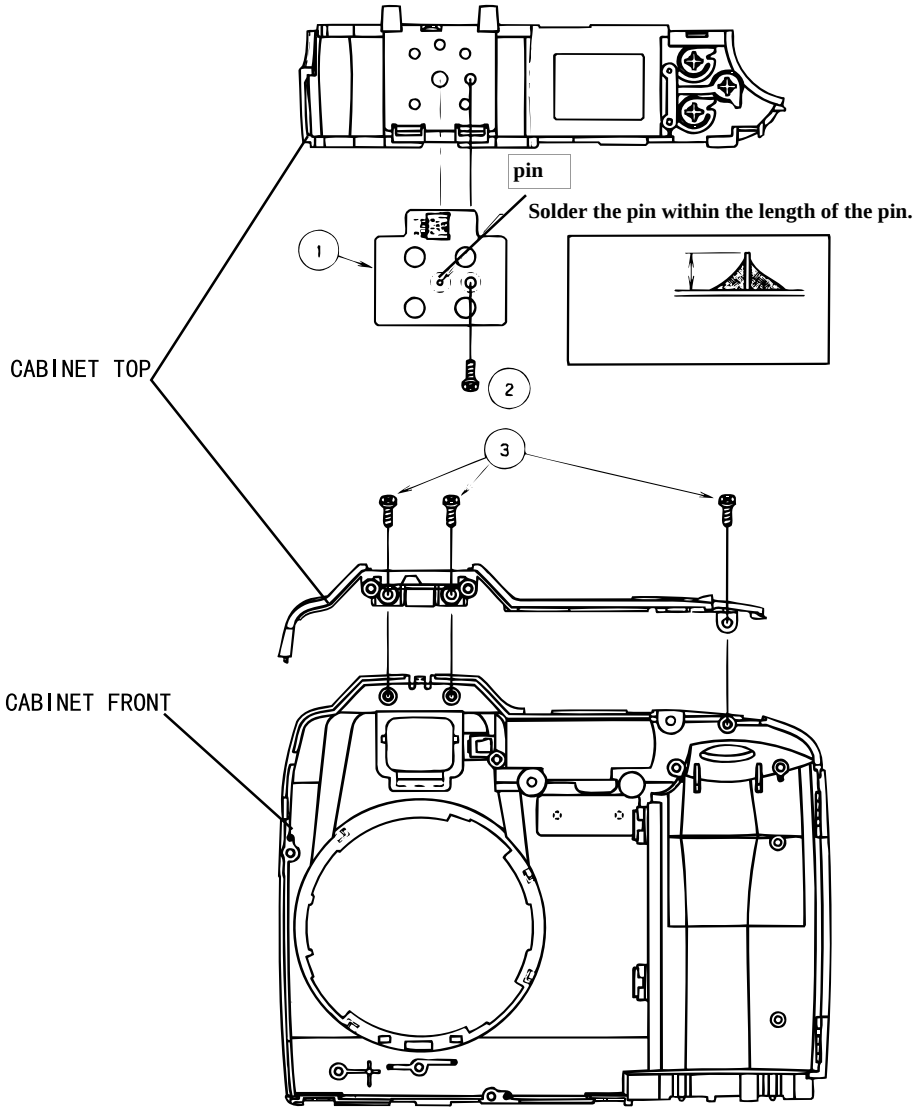


Figure 4-11. Installing the CABINET TOP

4.3.4 Installing the TB1 Board

1. Install the TB3 board (2) to the HOLDER SW(1) and secure it with a screw (3) (1.7x3).

CHECK POINT

Install the HOLDER SW to the CABINET FRONT so that the lever part of the LEVER SW goes between the HOLDER SW and TB3 board.

2. Install the HOLDER SW to the CABINET FRONT and secure it with a screw (4) (1.7x5).
3. Connect the ASSY. WIRE (5) to the connector CN545 of the ST1 board.

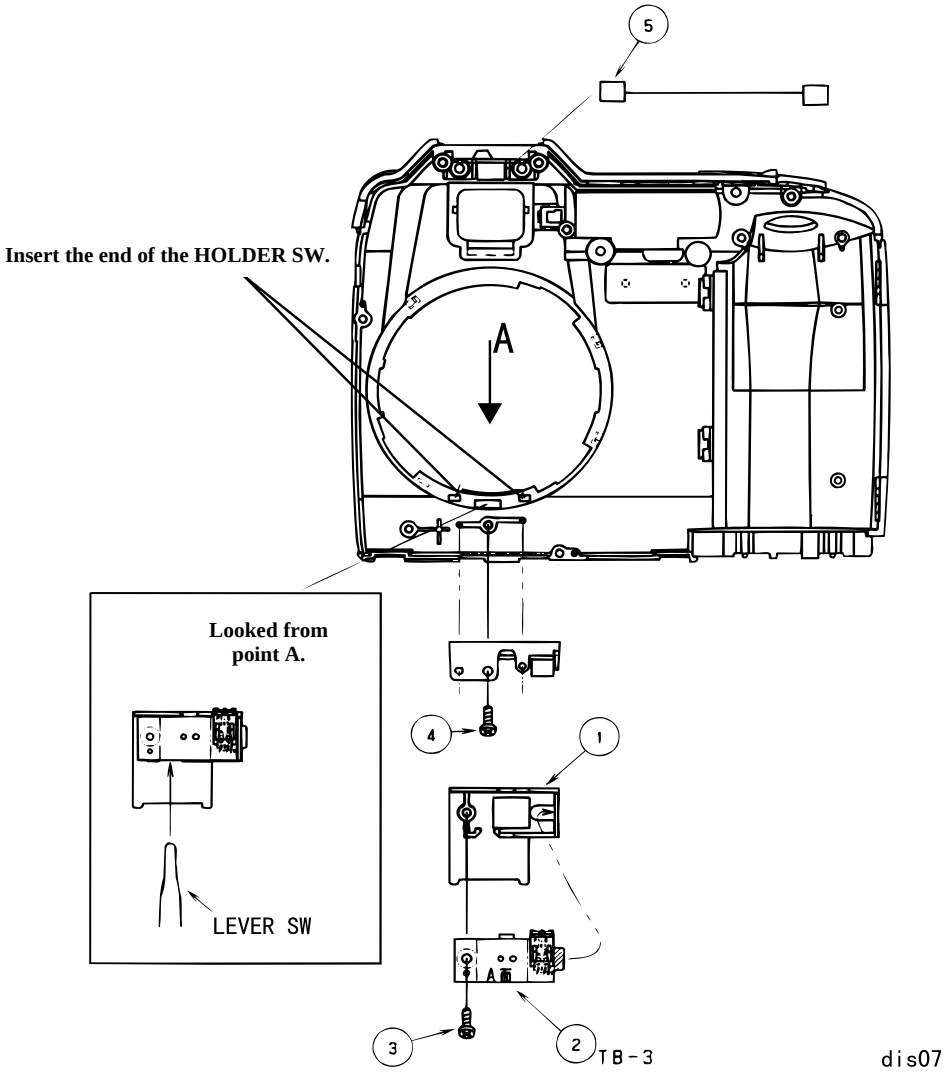


Figure 4-12. Installing the TB1 Board

4.3.5 Installing the Board Unit

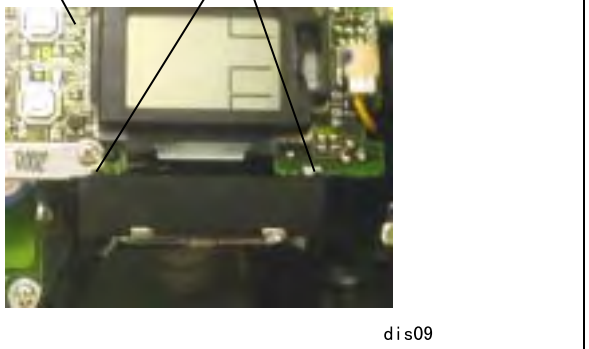
1. Install the STAND (1) to the board unit and secure it with 1 screw (2) (1.5x5).
2. Connect the harness from the SY1 board to the connector of the TB3.
3. Install the board unit to the CABINET FRONT.
4. Connect the harness of the ST1 board to the connector CN104 of the CA2 board.
5. Secure the HOLDER LENS to the CABINET FRONT with 3 screws (3) (1.7x5).

CAUTION

Make sure that the CABINET FRONT has the insulation tube. If there is no tube, the strobe voltage will be leaked out to the conductive plastic CABINET and may result in the strobe failure.

CHECK POINT

Be sure to latch the hooks (2 points) of the HOLDER FLASH to the SY1 board as shown below.



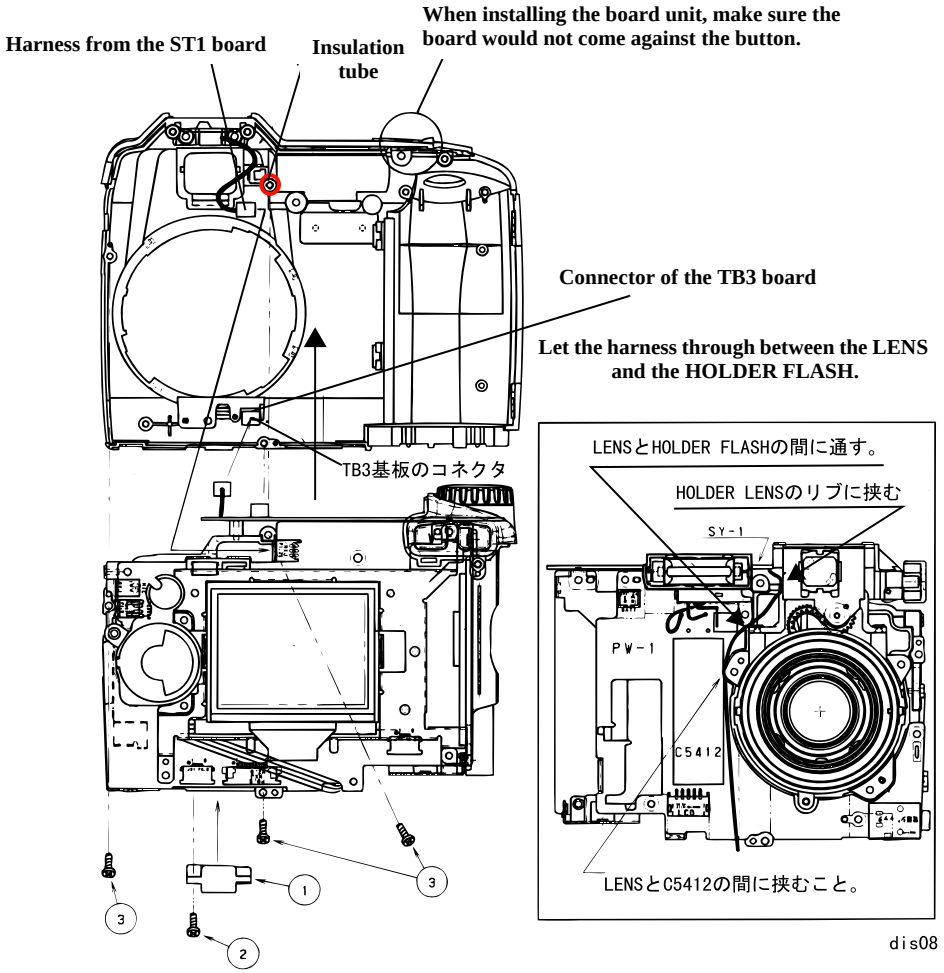


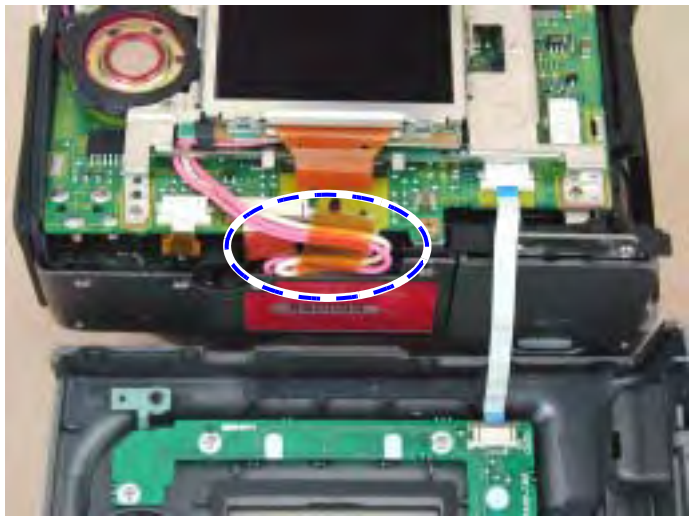
Figure 4-13. Installing the Board Unit

4.3.6 Installing the CABINET BACK

1. Install the LENS FPC to the CA2 board.
2. Connect the FPC from the CABINET BACK to the connector CN116 of the CA2 board and install the CABINET BACK to the CABINET FRONT.
3. Secure the CABINET BACK with 2 screws (1) (1.7x5).

CHECK POINT

Be careful not to bite the LCD lead wires (white / pink) near the tripod screw hole when assembling Cabinet back.



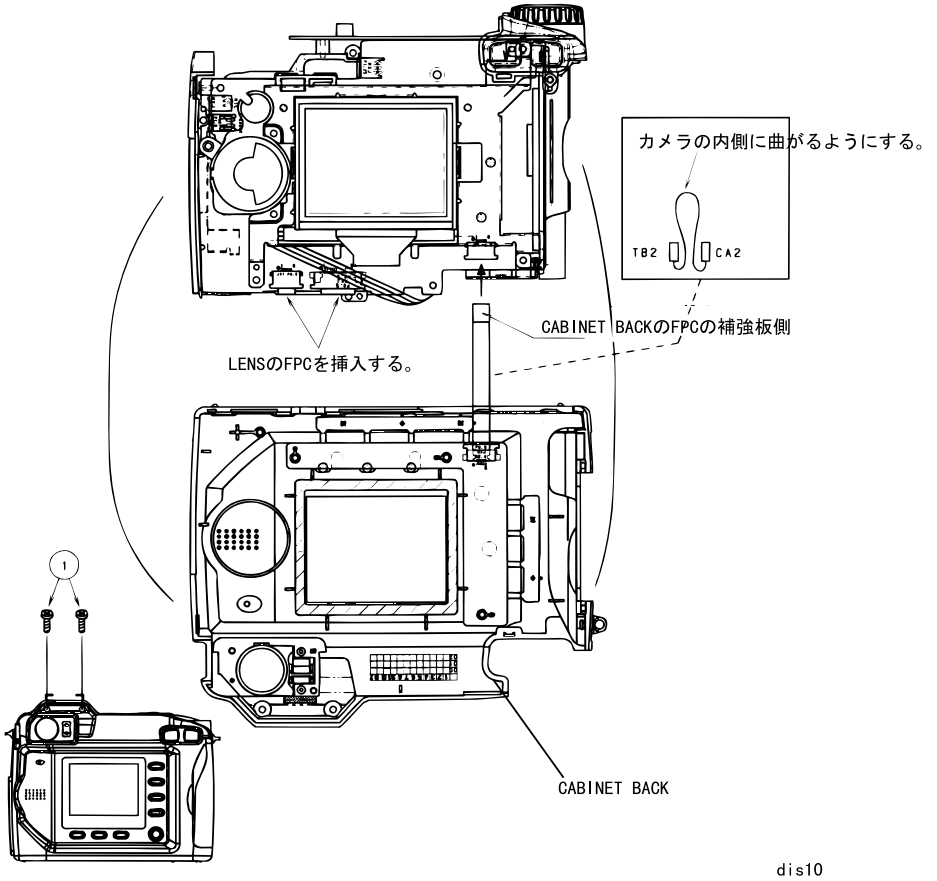


Figure 4-14. Installing the CABINET BACK

CHAPTER

5

ADJUSTMENT

5.1 Overview

This chapter describes various adjustments required for PhotoPC 3100Z. Refer to the table below and perform the appropriate adjustment whenever needed.

CAUTION

For this product, there are two repair levels; first maintenance and 2nd maintenance. The service for second maintenance is allowed to be done only by the service center equipped with special instruments for adjustment. We do not guarantee the repair result performed by the others.

Table 5-1 shows adjustment items required after replacing the parts and the repairing range accepted in the general field.

Table 5-1. 1st / 2nd Level Maintenance (at Board Replacement)

No.	Replacing Parts	Adjustment Items	Category
1	CA1 Board	1. Initial operation 2. Lens adjustment 3. AWB adjustment 4. Color matrix adjustment 5. CCD defect detect adjustment 6. LCD panel adjustment **Note: Observe the order.**	2nd maintenance
2	CA2 Board	1. Initial operation 2. Lens adjustment 3. AWB adjustment 4. Color matrix adjustment 5. CCD defect detect adjustment 6. CCD Black Defect Adjustment 7. LCD panel adjustment **Note: Observe the order.** Register the USB storage information.	2nd maintenance
3	Lens assembly	1. Lens adjustment 2. AWB adjustment 3. Color matrix adjustment 4. CCD defect detect adjustment 5. CCD Black Defect Adjustment **Note: Observe the order.**	2nd maintenance

Table 5-1. 1st / 2nd Level Maintenance (at Board Replacement)

No.	Replacing Parts	Adjustment Items	Category
4	CCD	Same as lens assembly.	2nd maintenance
5	LCD (monitor)	LCD panel adjustment 1. LCD H AFC adjustment 2. LCD RGB Offset adjustment 3. LCD Gain adjustment 4. LCD Blue Brightness adjustment 5. LCD Red Brightness adjustment **Note: Observe the order.**	1st maintenance
6	SY1 Board	Note: When replacing the terminals on SY1 board, perform the following adjustment. (2nd maintenance) Observe the order except for the LCD panel adjustment. 1. Lens adjustment 2. AWB adjustment 3. Color matrix adjustment 4. CCD defect detect adjustment	1st maintenance
7	PW1 Board	Note: When replacing the terminals on PW1 board, perform the following adjustment. (2nd maintenance) Observe the order except for the LCD panel adjustment. 1. IC501 oscillation frequency adjustment 2. 5.1V (D) voltage adjustment 3. 12.4V (L) voltage adjustment 1 4. Lens adjustment 5. AWB adjustment 6. Color matrix adjustment 7. CCD defect detect adjustment	1st maintenance

5.2 Tools

The following tables explain the tools needed for repairing service.

Table 5-2. Equipment

Name	Note
Oscilloscope	100MHz or more
Digital multi meter	--
Host computer	Windows Me or Windows 2000 Professional environment Following devices are required. • CD-ROM drive • 3.5 inch FD drive • RAM: 40MB or more • HDD drive: 15 MB or more • VGA or AVGA monitor with at least 256-color display. • A personal computer with a PCMCIA card slot implemented or a CF (compact flash) card reader. (to be used for re-installing of enhanced function)
Direct current stabilizing power supply	–
Frequency counter	–
AC adapter	2032635-05
Power cable	2031467-00

NOTE: *Note: Use AC Adapter in a set with Power cable*

Table 5-3. Tools

No.	Name		Note
1	Color Viewer 5100 K	×	103058400
2	DscCalibration Ver 1.26 adjustment program	×	Issued with this manual.
3	Siemens star chart	×	Attached on this manual appendix.
4	Color adjustment chart	○	104268100

○: available in the market, ×: not available in the market.

Since Dsc Calibration is designed exclusively for this model, it is impossible to use the old model such as Photo PC3000Z.

5.3 Preparation for Adjustment

This section describes how to set up the camera and PC before adjustment. Follow the procedures below and complete setting up. Prepare PC with Windows2000 Me, Windows2000 Professional or later. (See the caution below.)

WARNING

- ☐ **Remove the battery and plug off the AC adapter before disassembling the camera.**
- ☐ **The electrolytic capacitor (C5412) mounted on PW1 board is for flash strobe and set to be charged automatically whenever the power is ON. Due to this, it may cause electric shock during the service procedure. When repairing, be sure to discharge the camera, using the cement resistance. (See Refer to Figure 4-1..)**

CAUTION

Host computer should meet the following specifications.

- **PC/AT compatible PC with more than Pentium CPU**
- **FD drive for 3.5 inch 2HD**
- **PC with the USB port**
- **RAM: 40MB or more**
- **HDD drive: 15 MB or more**
- **VGA or AVGA monitor with at least 256-color display.**
- **If you try to boot the program with the camera off, the program indicates “Camera is not connected.” and becomes error condition.**

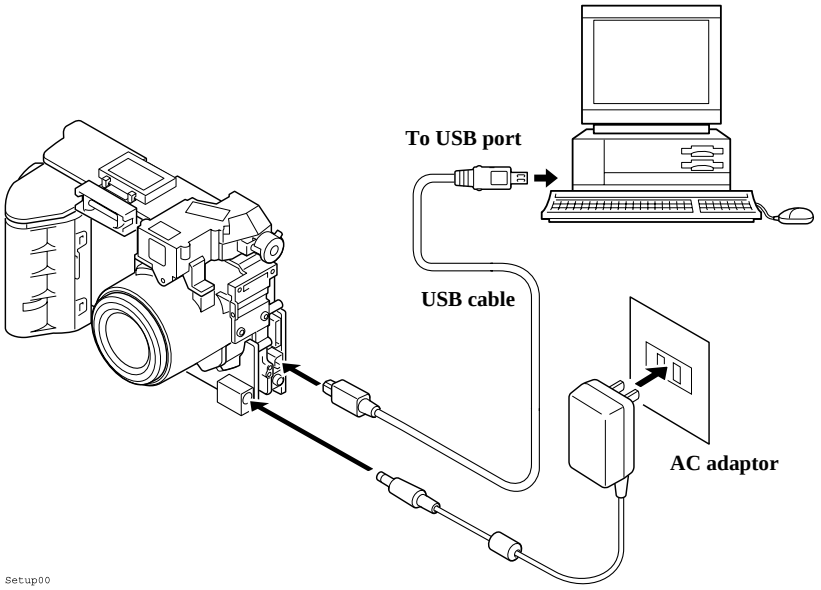


Figure 5-1. Set-up Before Adjustment

1. Connect a USB cable to the camera and turn on the camera.
2. Lining up the arrow on the cable connector with the notch on the camera's serial port, insert the connector.
3. Connect the USB cable to the USB port of PC.

NOTE: *Since the PC automatically recognizes the camera connected to the USB port, it is not necessary to reboot the PC.*

4. Insert the attached FD which has the adjustment program into your PC.
5. Double-click “DSCCalDi.EXE” to start the program automatically.

CAUTION

- If you try to boot the program with the camera off, the program indicates “Camera is not connected.” and becomes error condition.
- To stabilize the brightness, let the color viewer alone for 30 minutes (idling) before usage after power is turned on.

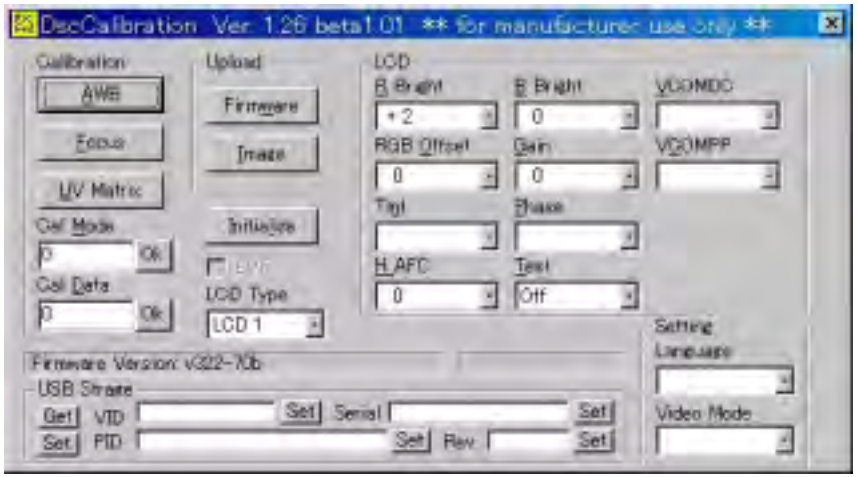


Figure 5-2. Adjustment Program Initial UI

5.4 Adjustment

5.4.1 Initial Operation

This section explains the initial operation required before the adjustment. Unlike EPSON previous models, the various settings will not be cleared by initialization for PhotoPC 3100Z. Initialization only clears the memory (image storage field).

CAUTION

Perform initialization before uploading the firmware. If you upload the firmware when the memory is full of data (taken images), error may be indicated.

1. Complete set-up before the adjustment. (See 5.3 Preparation for Adjustment.)
2. Press the initialize button on the program. The confirmation screen will appear.

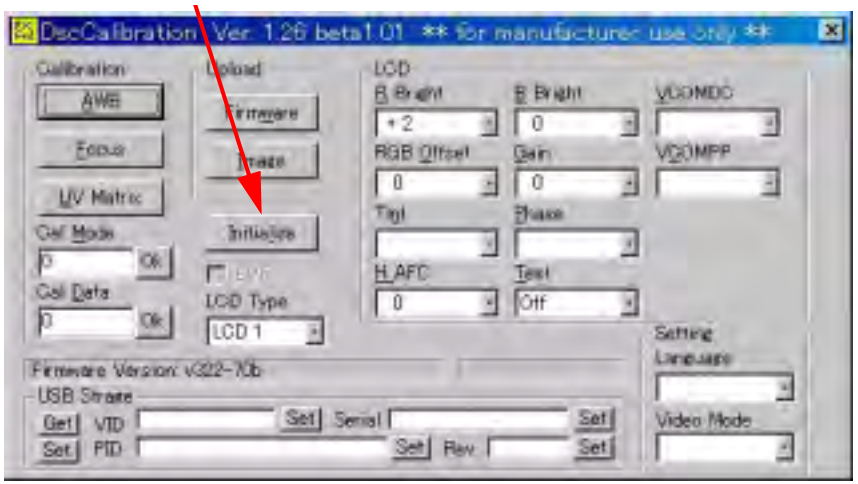


Figure 5-3. Program Screen When Initial Operation is Selected.

3. Select “Y” and perform initialization.
4. ★ mark on the camera, which indicates the resolution selection, moves for 20 seconds. (This period may vary according to the image data size currently stored. The timing that the ★ mark on the camera starts moving lags behind the timing that the program indicates its completion. When the program indicates it is completed, you can take off AC cable and USB communication cable.)
5. Click OK on the screen.

Figure 5-4. Program Screen When Initialization is Completed.

5.4.2 PW1 Board Adjustment

Adjustment is necessary when you replaced certain parts on the PW1 board, which is described in this section, but not required when you replaced PW1 board.

5.4.2.1 PW1 Board Measurement / Adjustment Points

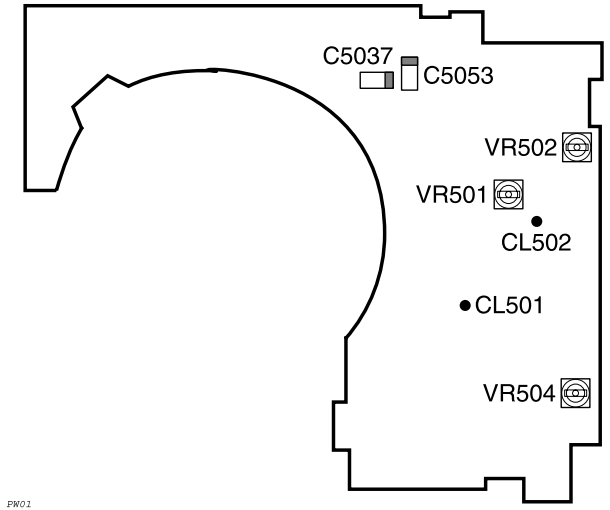


Figure 5-5. Measurement Points / Adjustment Points

PREPARATION

1. Remove the SY1 board and holder battery.
2. Connect the SY1 board again.

NOTE: *The harness connecting SY1 board and TB1 board may not be connected.*

3. Insert the CompactFlash card.
4. Turn on the power switch, and then set to the LCD mode.
   (To indicate the through image on the LCD.)

5.4.2.2 IC501 Oscillation Frequency Adjustment

SETTING

- ☐ Measuring point: CL501 or CL502
- ☐ Measuring equipment: Frequency counter
- ☐ Adjustment location: VR501
- ☐ Adjustment value: 200 ± 1kHz

ADJUSTMENT METHOD

Adjust with VR501 to 200 ± 1 kHz.

NOTE: *If this adjustment value is out of the range, radiation noise may increase.*

5.4.2.3 5.1V (A) Voltage Adjustment

SETTING

- ☐ Measuring point: CL5037
- ☐ Measuring equipment: Digital voltmeter
- ☐ Adjustment location: VR502
- ☐ Adjustment value: 5.10 ± 0.05V

ADJUSTMENT METHOD

Adjust with VR505 to 5.10 ± 0.05 V.

NOTE: *Analog voltage 15.1V(A), -7.6V(A), 3.85V(A) also adjusted at the same time.*

5.4.2.4 12.4V (L) Voltage Adjustment

This is LCD panel voltage adjustment.

SETTING

- ☐ Measuring point: C5053
- ☐ Measuring equipment: Digital voltmeter
- ☐ Adjustment location: VR504
- ☐ Adjustment value: 12.40 ± 0.05V

ADJUSTMENT METHOD

Adjust with VR504 to 12.40 ± 0.05 V.

NOTE: *15.5V(L) and 3.7V(L) are also adjusted at the same time.*

5.4.3 Lens Adjustment

PREPARATION

- ☐ Power switch: ON
- ☐ Dial switch: Communication mode

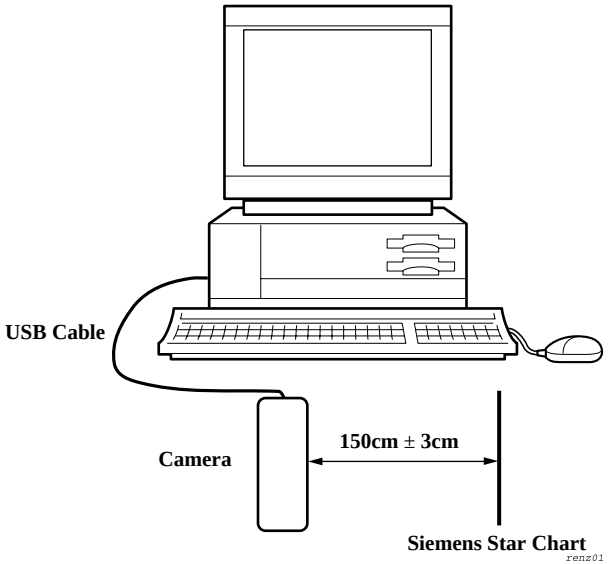


Figure 5-6. Lens Adjustment

ADJUSTMENT CONDITION

- ☐ Siemens star chart (A3)
- ☐ Fluorescent light illumination with no flicker (incandescent light cannot be used.)
- ☐ Illumination above the subject should be 400lux ± 10%

ADJUSTMENT METHOD

1. Set the siemens star chart 150 cm ± 3 cm so that it becomes center of the screen.
2. Double-click on the Dsc Calibration.
3. Click the “Focus”, and Click the “Yes”.

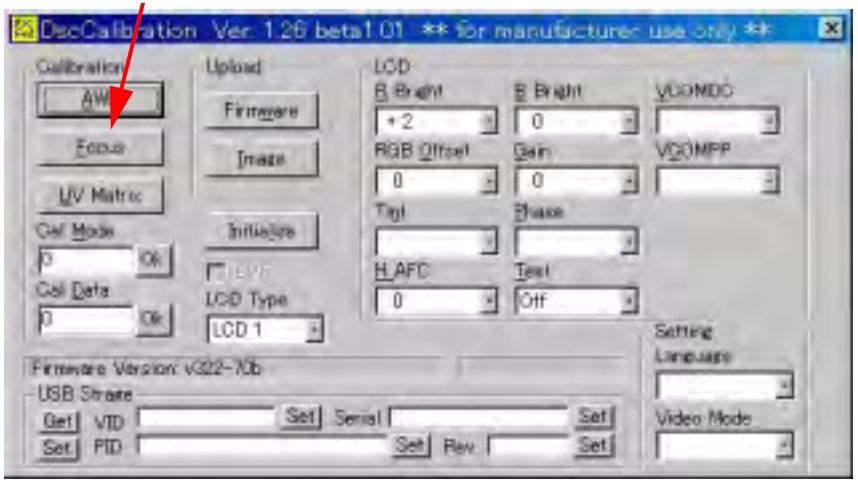


Figure 5-7. Lens Adjustment Button Location

4. Adjustment value will appear on the screen.

- ☐ Adjustment level
  STD.AFOPS=0
- ☐ Error: If STD.AFOPS is not “0”, it is an error.
  - ■ Error example
    STD.AFPOS=1: failure in detecting lens unit home position.

5. Click the OK.

5.4.4 AWB Adjustment

PREPARATION

- ☐ Power switch: ON
- ☐ Dial switch: Communication mode

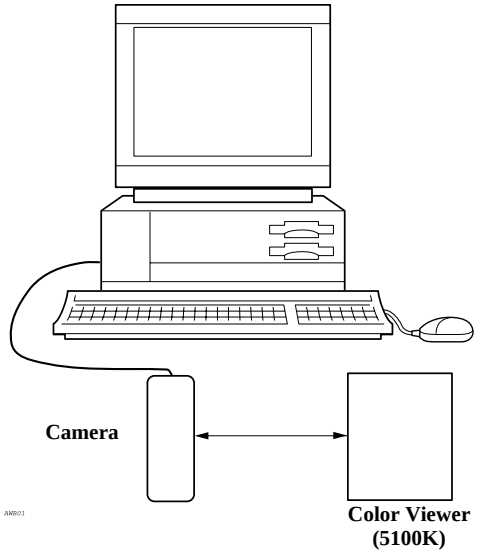


Figure 5-8. AWB Adjustment

ADJUSTMENT METHOD

1. When setting the camera in place, set it to an angle so that nothing appears in any part of the color viewer except the white section. (Do not enter any light.)
2. Double-click on the Dsc Calibration.
3. Click the “AWB”, and click the “Yes”.

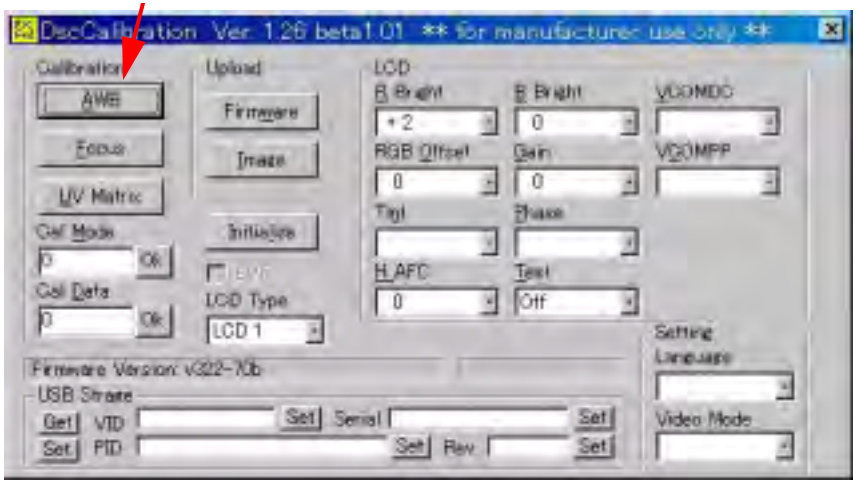


Figure 5-9. AWB Adjustment Button Location

4. AWB adjustment value will appear on the screen. WC=Y, U, V

- ☐ Adjustment Value
  - ■ Y=128 ± 20
  - ■ U=128 ± 20
  - ■ V=140 ± 20

5. Click the OK.

CAUTION

- ■ **When adjusting AWB, “CCD Black Defect Adjustment” in page -89 must be done subsequently.**
- ■ **After the AWB adjustment, power off and on the camera once.**

5.4.5 Color Matrix Adjustment

When adjusting the color matrix, it is also checking the aperture operation.

PREPARATION

- ☐ Power switch: ON
- ☐ Dial switch: Communication mode

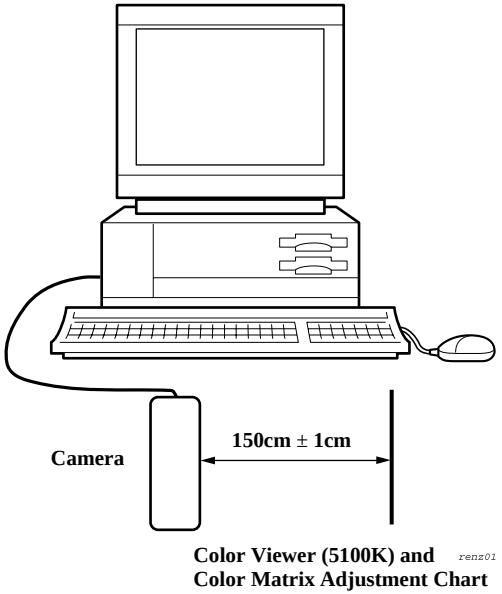


Figure 5-10. Color Matrix Adjustment

ADJUSTMENT METHOD

1. Set the color adjustment chart to the color viewer. (Do not enter any light.)
2. Set the color adjustment chart so that it becomes center of the screen.
3. Double-click on the Dsc Calibration.
4. Click the “UV Matrix”, and Click the “Yes”.

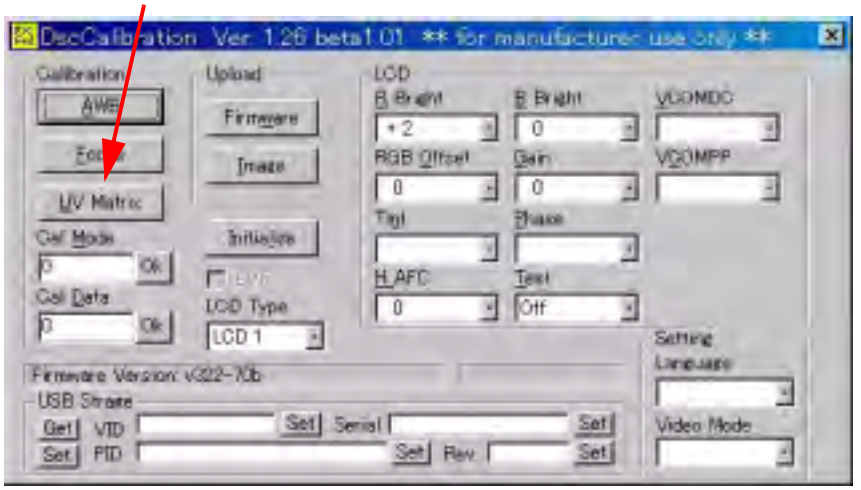


Figure 5-11. Color Matrix Adjustment Button Location

5. Matrix adjustment values will appear on the screen. UD=A, B, C, D

- ☐ Adjustment level
  - ■ When all of A, B, C, D show 3 digit figure, it is OK.
- ☐ Error
  - ■ A, B, C, D=1

6. Click the OK.

5.4.6 CCD Defect Detect Adjustment

PREPARATION

- ☐ Power switch: ON
- ☐ Dial switch: Communication mode
- ☐ Lens cover switch: Closed

ADJUSTMENT METHOD

1. Double-click on the Dsc Calibration.
2. Click the “CCD Defect Detection”, and click the “Yes”.

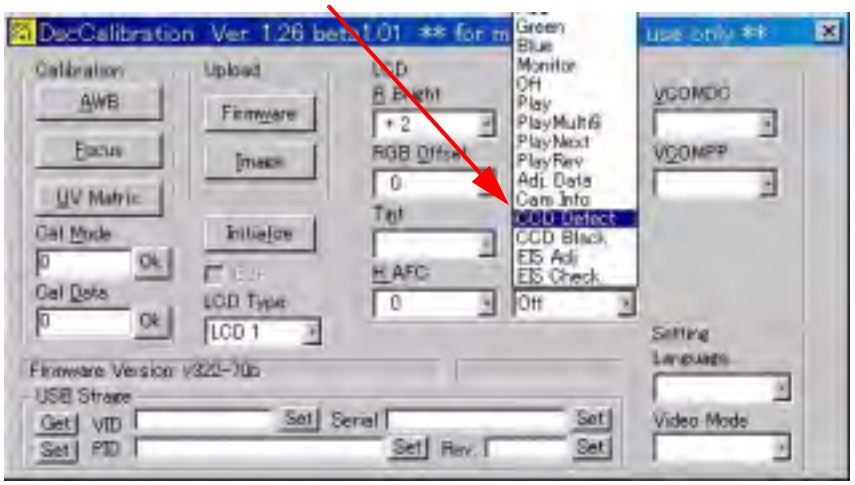


Figure 5-12. CCD Defect Detect Adjustment

3. After the adjustment is completed, if there is any defection, at most 512 defection is indicated x, y matrix.)

adj15

Figure 5-13. CCD Defect Detect Adjustment Result

CHECK POINT

If the result of adjustment was failed, NG is indicated. However, it is quite rare that the result becomes NG except having had a wrong procedure.
If the result was NG, check the adjustment procedure and retry the adjustment. If the result is still NG even after some trials, CCD might be defective. Replace the CCD and retry the adjustment.

5.4.7 CCD Black Defect Adjustment

PREPARATION

- ☐ Power switch: ON
- ☐ Dial switch: Communication mode

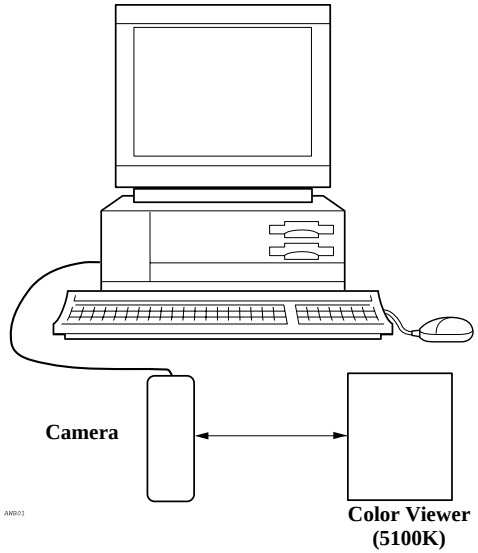


Figure 5-14. CCD Black Defect Adjustment

ADJUSTMENT METHOD

1. Fix the camera to allow only the white part of color viewer indicated in the screen. (minimize the external light coming in.)
2. Double-click on the DscCalDi126.
3. Click the “CCD Black” in the pull down menu of TEST and click the “Yes (Y)”.

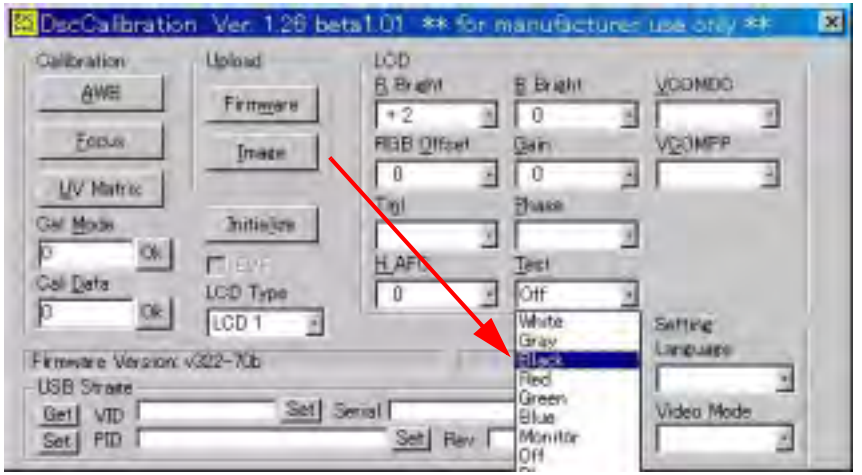


Figure 5-15. Location of CCD Black Defect Adjustment adjust button.

4. After the adjustment is completed, the number of defects detected is indicated.

CHECK POINT

If the result of adjustment was failed, NG is indicated. However, it is quite rare that the result becomes NG except having had a wrong procedure.
If the result was NG, check the adjustment procedure and retry the adjustment. If the result is still NG even after some trials, CCD might be defective. Replace the CCD and retry the adjustment.

5.4.8 LCD Panel Adjustment

This adjustment is required when replacing LCD. The measurement / adjustment points of CA2 board is shown below.

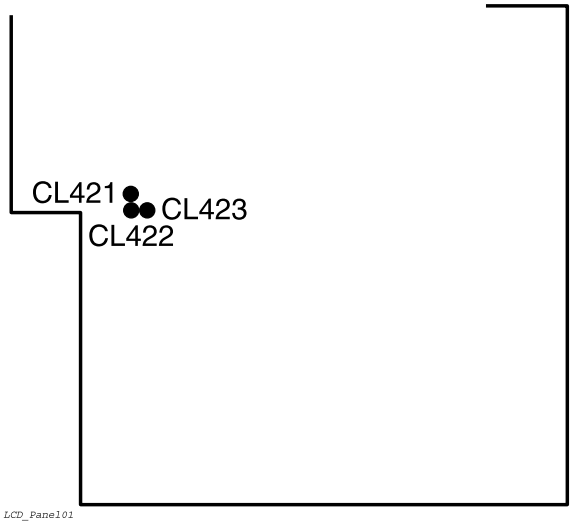


Figure 5-16. Measurement / Adjustment Points

5.4.8.1 LCD H AFC Adjustment

PREPARATION

- ☐ Power switch: ON
- ☐ Dial switch: Communication mode

ADJUSTMENT METHOD

1. Double-click on the Dsc Calibration.
2. Select “0” on the LCD “H AFC”.

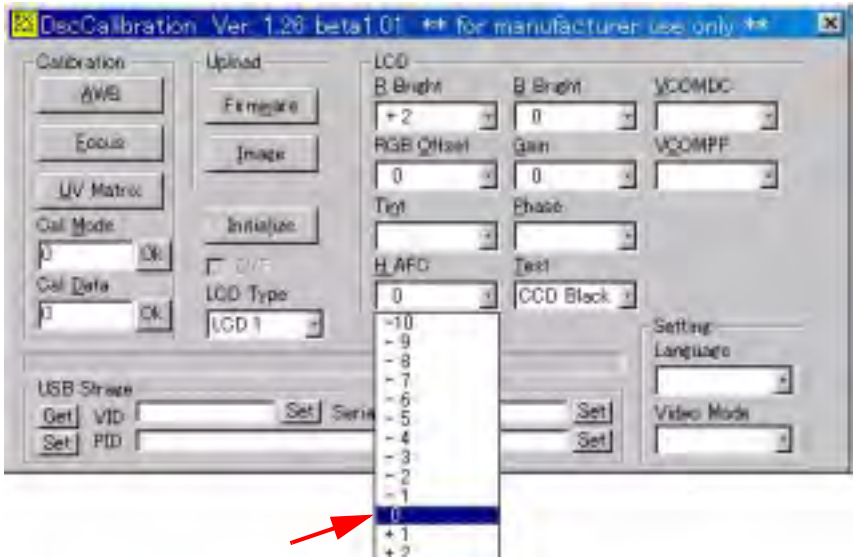


Figure 5-17. LCD H AFC Adjustment Button Location

3. While looking at the LCD monitor, adjust “H AFC” so that the edge of the LCD adjustment frame are the same distance from the left and right edge of the LCD screen. (A= B)

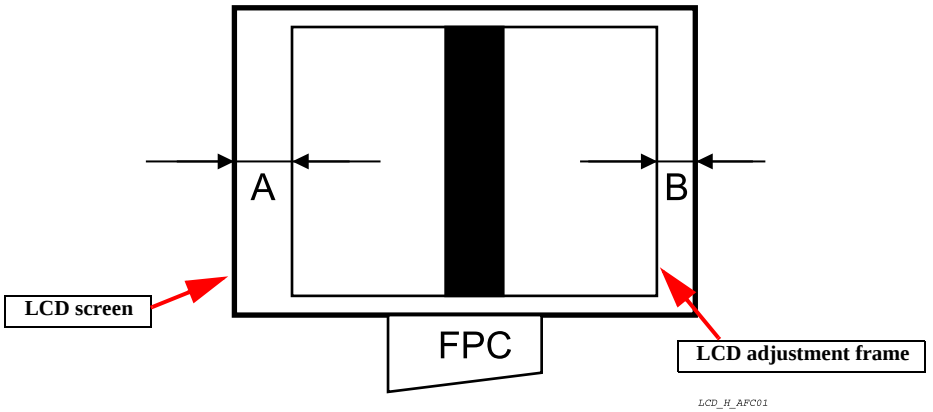


Figure 5-18. LCD H AFC Adjustment

5.4.8.2 LCD RGB Offset Adjustment

PREPARATION

- ☐ Power switch: ON
- ☐ Dial switch: Communication mode

ADJUSTMENT METHOD

1. Double-click on the Dsc Calibration.
2. Select “0” on the LCD “RGB Offset”.

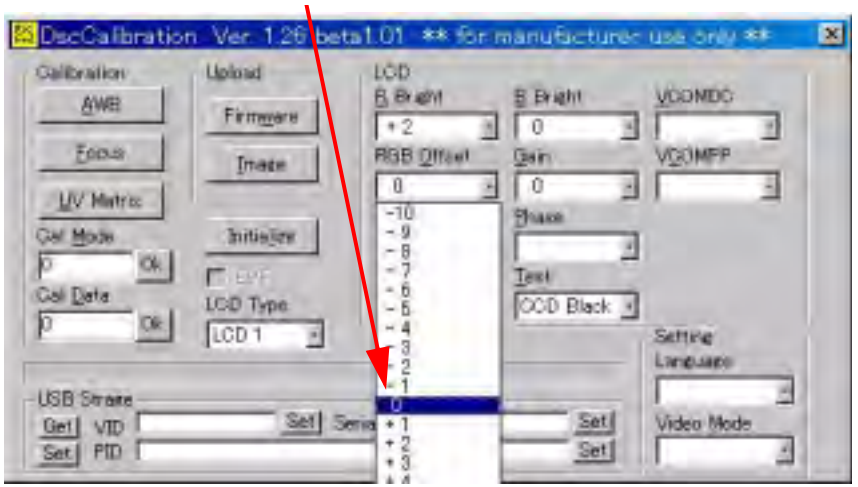
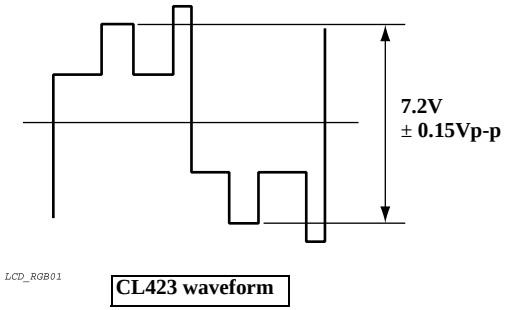


Figure 5-19. LCD RGB Offset Adjustment Button Location

ADJUSTMENT METHOD

Adjust LCD “RGB Offset” so that the amplitude of the CL423 waveform becomes 7.2V±0.15Vp-p.



CL423 waveform

Figure 5-20. RGB Offset Adjustment

5.4.8.3 LCD Gain Adjustment

PREPARATION

- ☐ Power switch: ON
- ☐ Dial switch: Communication mode

ADJUSTMENT METHOD

1. Double-click on the Dsc Calibration.
2. Select “0” on the LCD “Gain”.

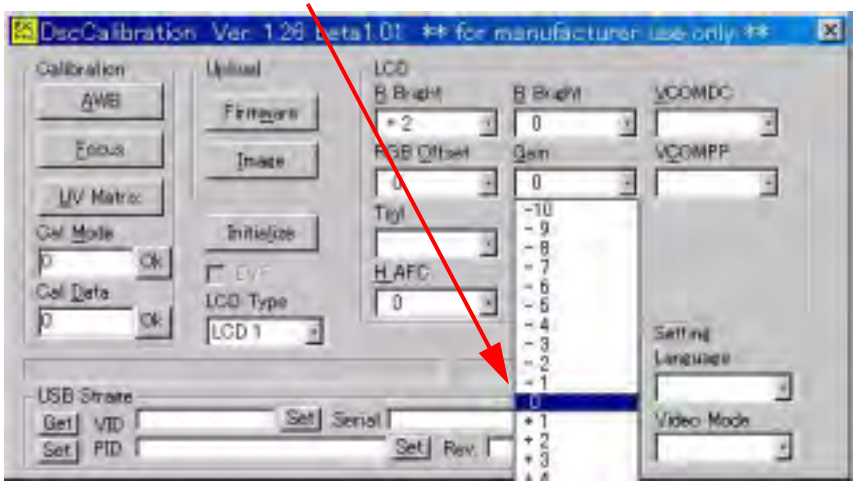


Figure 5-21. LCD Gain Adjustment Button Location

ADJUSTMENT METHOD

Adjust LCD “Gain” so that the amplitude of the CL423 waveform becomes 4.0V±0.1Vp-p.

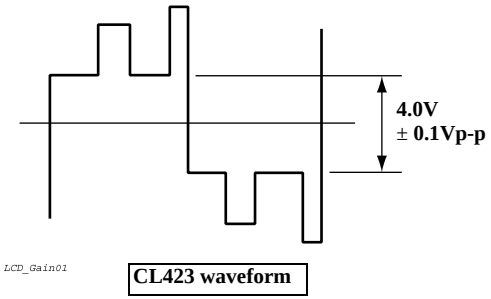


Figure 5-22. Gain Adjustment

CAUTION

LCD Gain adjustment always must be done after 5.4.8.2 LCD RGB Offset adjustment. (See “LCD Gain Adjustment” on page -92)

5.4.8.4 LCD Blue Brightness Adjustment

PREPARATION

- ☐ Power switch: ON
- ☐ Dial switch: Communication mode

ADJUSTMENT METHOD

1. Double-click on the Dsc Calibration.
2. Select “0” on the LCD “B Brightness”.

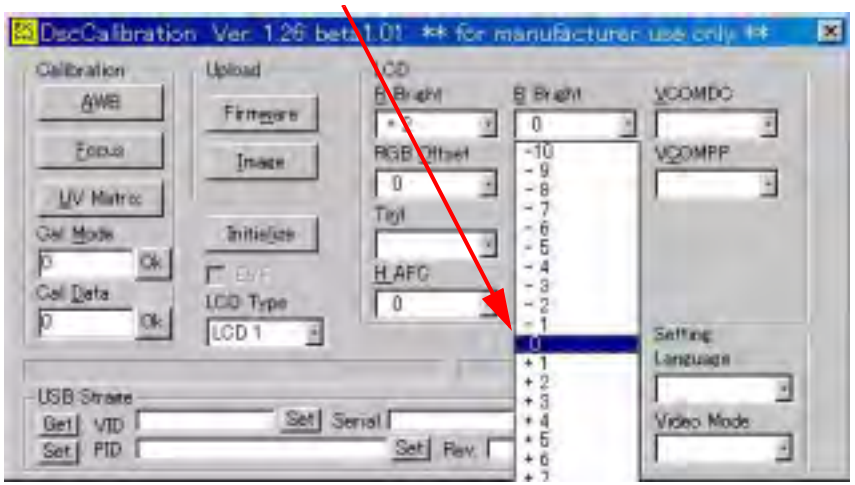


Figure 5-23. LCD Blue Brightness Adjustment Button Location

ADJUSTMENT METHOD

Adjust LCD “B Bright” so that the amplitude of the CL423 waveform is VG ± 0.1 Vp-p with respect to the CL423 (VG) waveform.

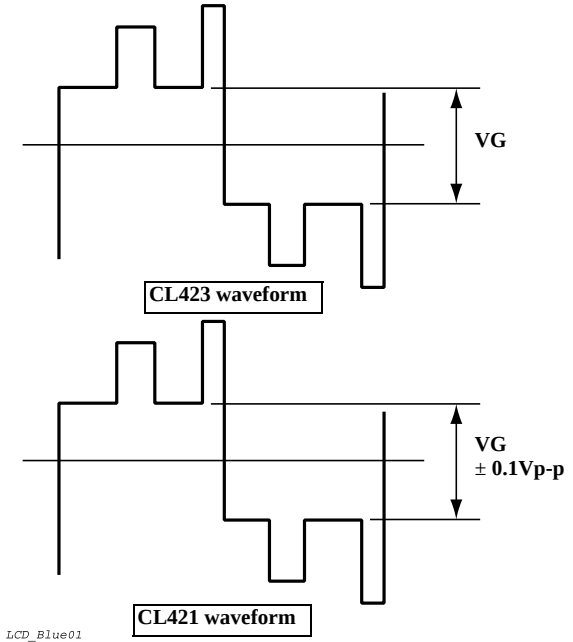


Figure 5-24. Blue Brightness Adjustment

CAUTION

Perform this adjustment after LCD RGB Offset adjustment and LCD Gain adjustment. (See 5.4.8.2 LCD RGB Offset Adjustment and 5.4.8.3 LCD Gain Adjustment)

5.4.8.5 LCD Red Brightness Adjustment

PREPARATION

- ☐ Power switch: ON
- ☐ Dial switch: Communication mode

ADJUSTMENT METHOD

1. Double-click on the Dsc Calibration.
2. Select “0” on the LCD “R Brightness”.

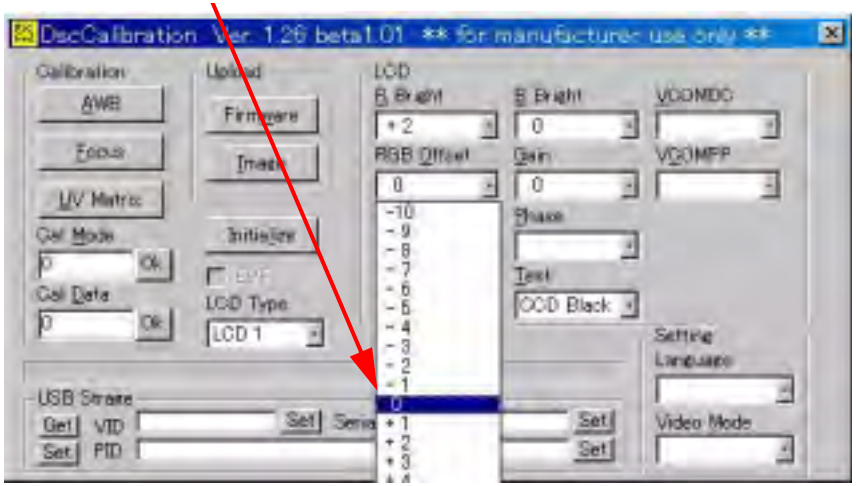


Figure 5-25. LCD Red Brightness Adjustment Button Location

ADJUSTMENT METHOD

Adjust LCD “R Bright” so that the amplitude of the CL422 waveform becomes VG ± 0.1 Vp-p with respect to the CL423 (VG) waveform.

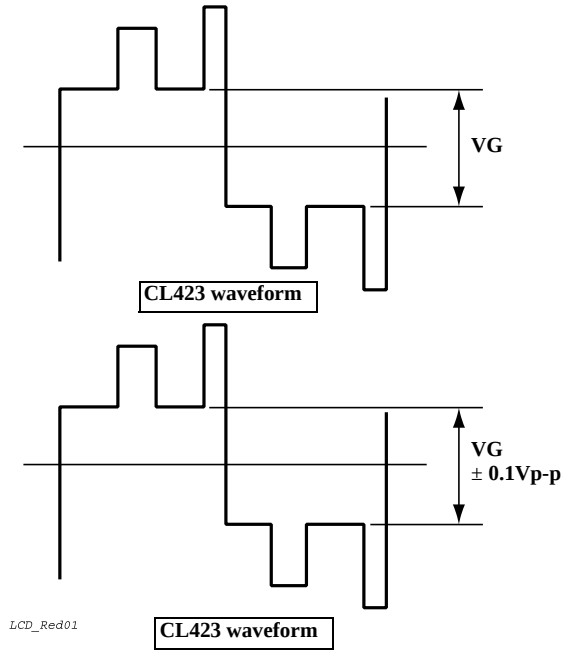


Figure 5-26. Red Brightness Adjustment

CAUTION

Perform this adjustment after LCD RGB Offset adjustment and LCD Gain adjustment. (See 5.4.8.2 LCD RGB Offset Adjustment and 5.4.8.3 LCD Gain Adjustment)

5.4.9 Firmware Upload

5.4.9.1 Firmware Upload By Adjustment program

It is possible to update the firmware of camera using the Upload function of DscCalibration. The procedure is as follows.

1. Complete the setup for the adjustment. (See “Preparation for Adjustment” on page -80.)
2. Copy the firmware provided by EPSON to the hard disk. (Firmware is usually compressed with bin file.)
3. Set the dial switch to “Communication mode”.
4. Select “Firmware” of upload.

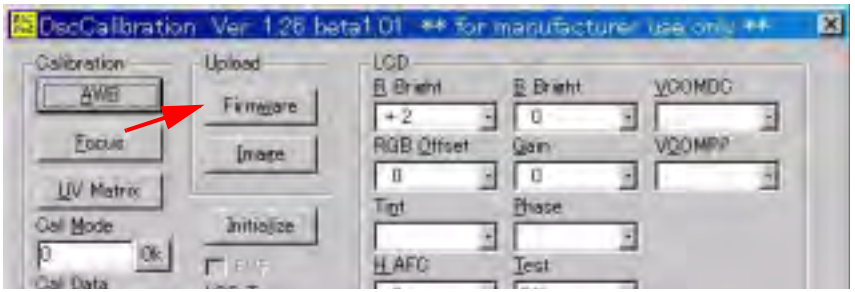


Figure 5-27.

5. File open dialog will appear for you to select the place file is stored.

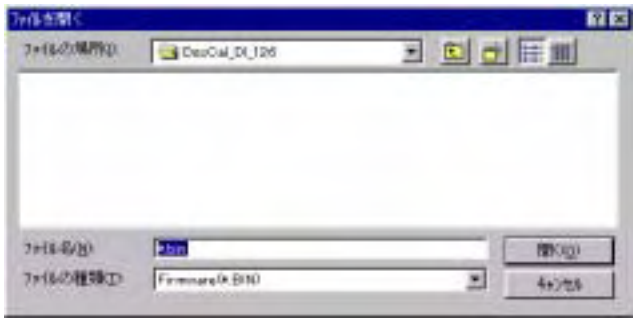


Figure 5-28. Program Screen of Firmware Upload

6. Select the latest firmware and click “open”.
7. LED on the front side of the camera will blink for 20 seconds and notifies you that the upload is being normally performed. (You cannot check this LED when you removed SY1 board.)

CAUTION

- **During the firmware upload, if the power is shut down or if the USB communication cable is taken off, it may result in the defective flash memory. Never perform other operation until “Complete” is indicated.**
- **When performing the firmware upload, Hyper function will be deleted at the same time. After completing the upload, re-install the function by using “Uploader” attached with the product.**

8. When it comes close to the Upload completion, the camera beeps once and notifies you that the camera finishes read-in operation and starts writing into Flash Memory operation.

CAUTION

Be careful not to confound this beep sounds that notifies you that the starts writing into Flash Memory operation with the one at the end. Check if the indication on the camera says “Completion”.

9. After a few seconds (1-2 seconds), the writ-in operation is completed and the camera beeps once again. “Complete” is indicated on the program screen to show upload is completed.
10. Press OK button.

5.4.9.2 Firmware Upload By CF Card

It is possible to update the firmware of camera using the CF card,but not depending on PC. The procedure is as follows.

1. Create “firmware” folder on the PC desktop. (PC must have PCMCIA card slot.)
2. Put the firmware file in this folder.
3. Insert the PCMCIA adapter with PCMCIA CF card inserted. Adapter is defined as the removal disk.
4. Copy “firmware” folder to the root of the PCMCIA adapter, using explore.
5. Take the CF card out of PCMCIA and insert it to PhotoPC 3100Z.
6. Turn the dial switch to the “PLAYBACK mode” and turn the power on.
7. The current firmware version appears on the monitor and push on "YES" button. Then, the firmware upload mode will be strated.
8. The new firwmware version appears on the monitor and push "No" button.
9. Turn off the camera and remove the CF card.

When remove the PCMCIA card, the card must be off line.

5.5 USB Storage Information Registration

The USB storage information is an important information for connecting the camera with your PC by the USB interface. If the USB storage information was wrong or missed, the USB rejects the connection. Be sure to check the USB storage information and register.

PREPARATION

☐ Power switch: ON

ADJUSTMENT METHOD

1. Complete the setup for the adjustment. (See 5.3 Preparation for Adjustment (p80).)
2. Double-click on the DscCalDi126.
3. Click the USB storage "Get" and check the USB storage information.
   - VID: EPSON
   - PID:
   - Serial:
   - Rev.: 1.00
4. Check the Serial of the above USB storage information. If the indication is different from the serial number of the bottom of set, input the serial number of the bottom of set and click the “Set”.
5. Check the USB storage information about VID and Rev. next. If they are different from the actual ones, input the above specified values and click the “Set”.

NOTE: *If the setting of language is necessary, set on the camera.*

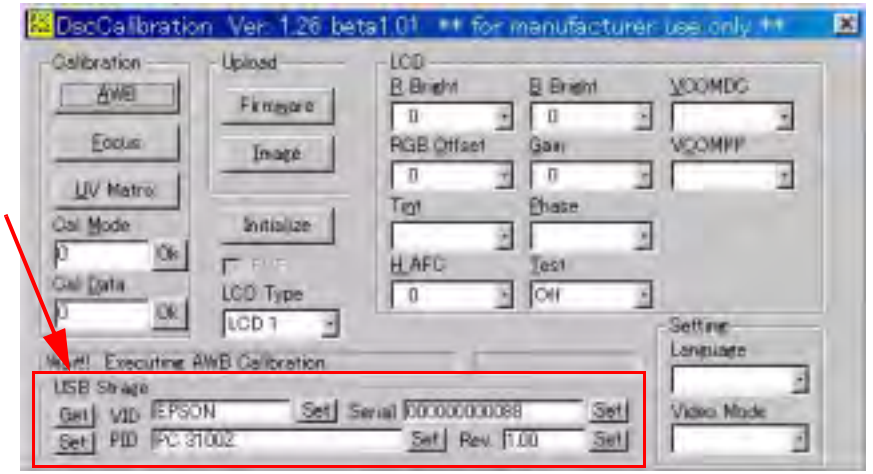


Figure 5-29. USB Storage Information screen

CAUTION

If accidentally having done the initialization of DscCal, each adjustment returns to its former status but the USB storage information has been stored and not necessary to register again.

CHAPTER

6

MAINTENANCE

6.1 Overview

PhotoPC 3100Z requires no specific maintenance (lubrication / adhesion / cleaning).

Camera should be cleaned according to its necessity, however, such as for dust incoming at the repairing service or fingerprint. The following table lists the check items before sending the camera back to users.

6.1.1 Check Items

Check the camera with the following table. If you find any dust or dirt on the camera, clean it referring to the next Chapter 4 "Disassembly and Assembly". Certain dirt such as dust and fingerprints must be cleaned as described in the table below.

Table 6-1. Places and methods to clean

Place to clean	Method
Cosmetic case	Wipe by a soft dry cloth.If a dirt is heavy, first remove it by a soft cloth which has been dipped in a thin liquid of neutral detergent and squeezed up. Then wipe by a soft dry cloth.
Lens	Blow the dust off by a blower or an air blush. Then gently wipe by a soft cloth.
LCD monitor	Gently wipe by a soft cloth.

Table 6-2. Check Items

No.	Check Item	OK / NG
1	Check the lens viewer inside / outside if it is dirty with fingerprints etc. Check if any cable such as power supply cable is visible.	☐OK ☐NG
2	Is the operation of the rotary switch smooth? Can you feel it clicked when you click the switch?	☐OK ☐NG
3	Are there any dust or cables visible inside / outside of the flash window?	☐OK ☐NG
4	Is there any fingerprints or dust on the LCD panel surface glass on SY1 board or inside / outside of the acrylic plate of rear cabinet?	☐OK ☐NG
5	Is there any fingerprint or dust on the lens surface?	☐OK ☐NG
6	Is there any fingerprint or dust inside / outside of the LCD monitor window?	☐OK ☐NG
7	Does the battery cover open and close normally?	☐OK ☐NG
8	Is the compact flash card inserted normally?	☐OK ☐NG
9	Is the rubber cover that covers various connectors and serial connectors properly secured to the rear cabinet?	☐OK ☐NG
10	Is the various panel switch operation done properly?	☐OK ☐NG
11	Is the appearance clean?	☐OK ☐NG

CHAPTER19

7

APPENDIX

7.1 Circuit Board Connection Diagram

The next page is the circuit board connection diagram.

USB CONNECT

CN141

CN110

1	VDD
2	D-
3	D+
4	GND

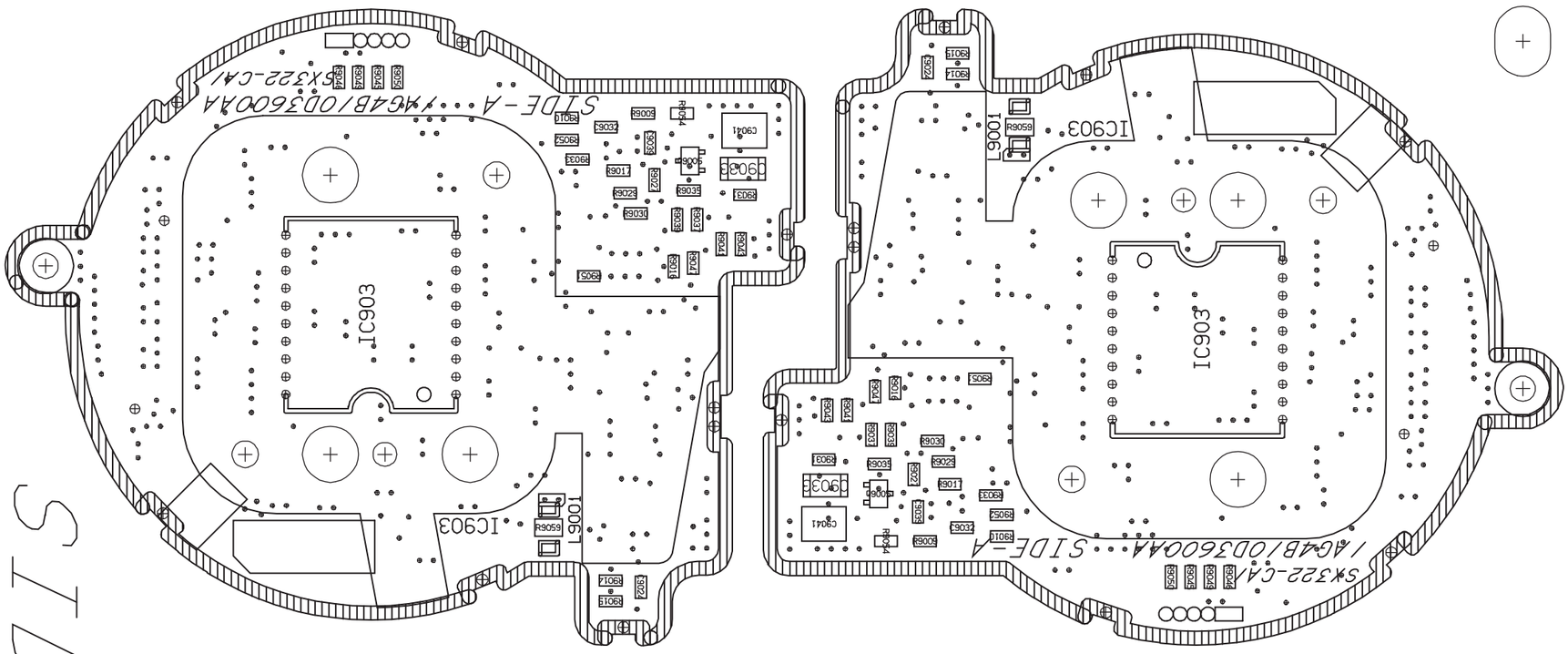
| | | |

7.2 Circuit Board Component Layout

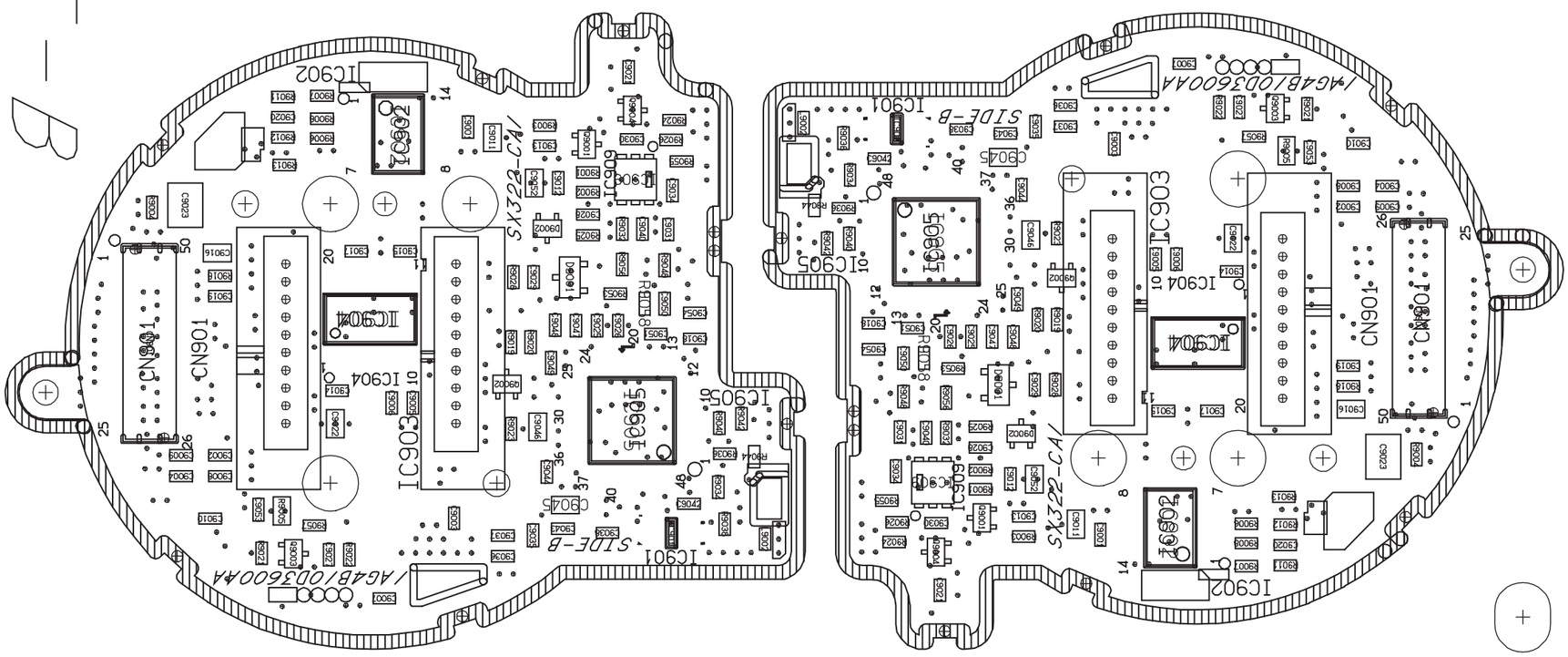
This section shows the following circuit board component layout for PhotoPC 3100Z.

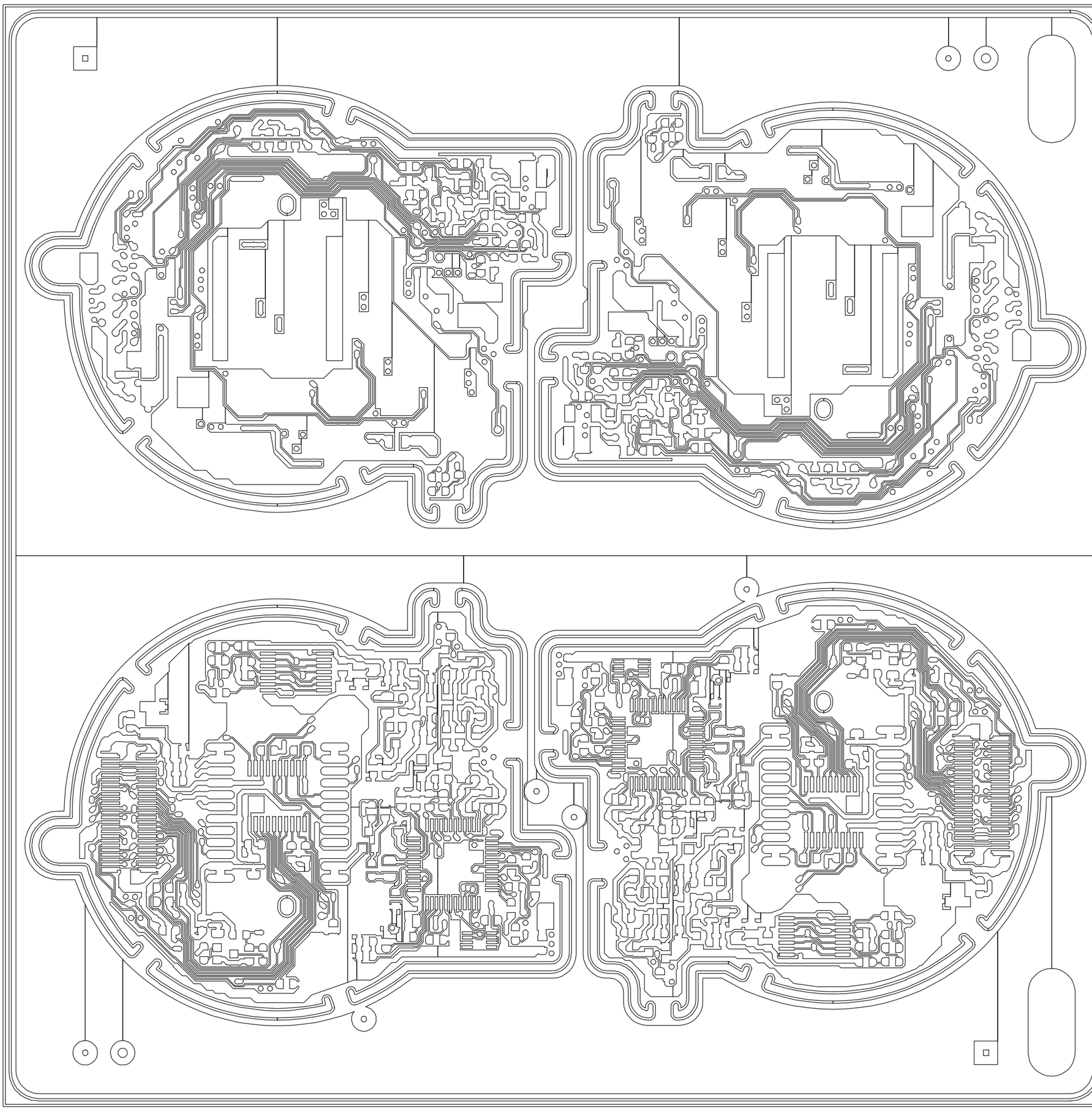
- ☐ CA1 Circuit Board
- ☐ CA2 Circuit Board
- ☐ PW1, TB1/2/3, ST1, SY1 Circuit Board

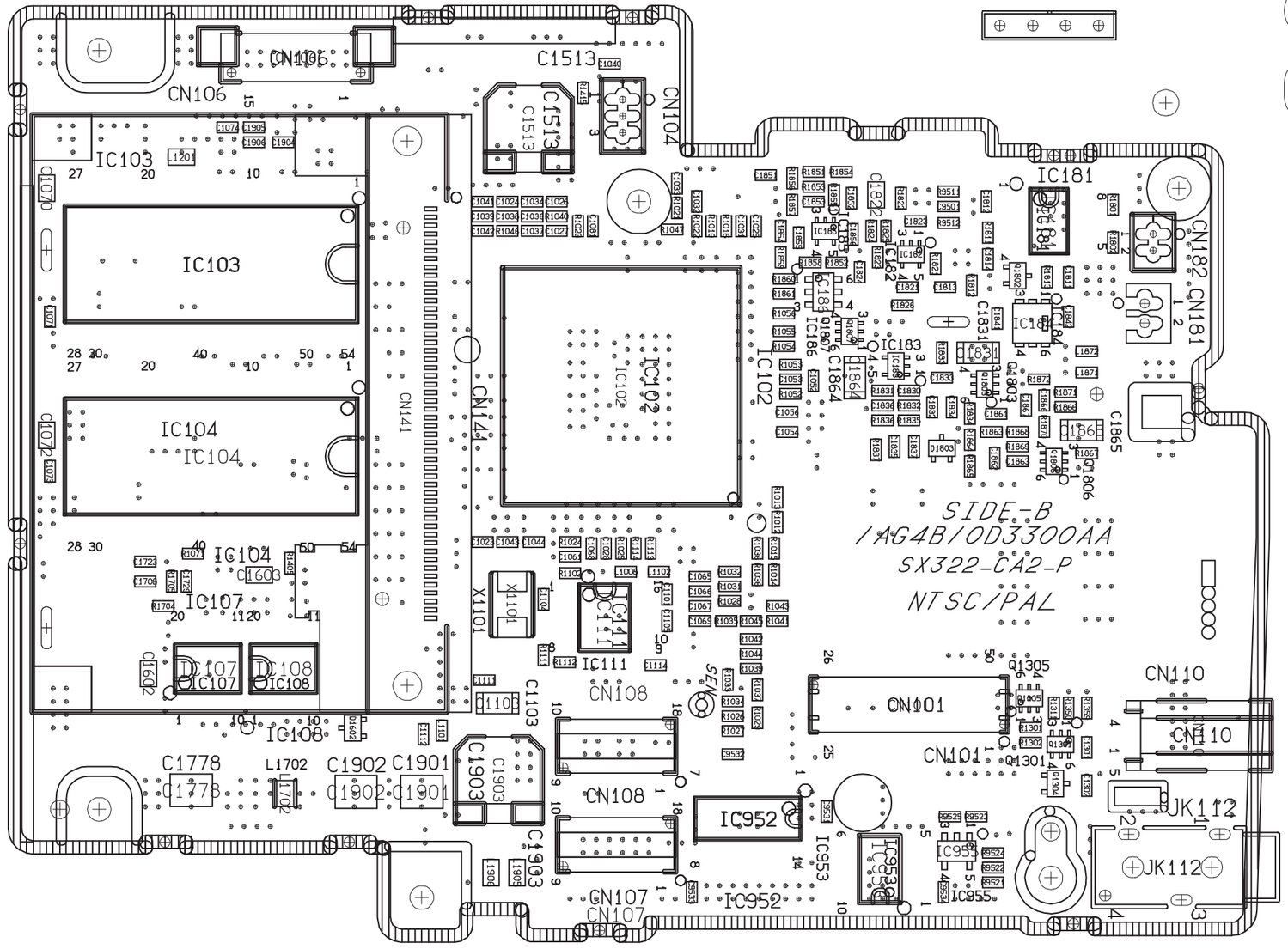
SIDE-A

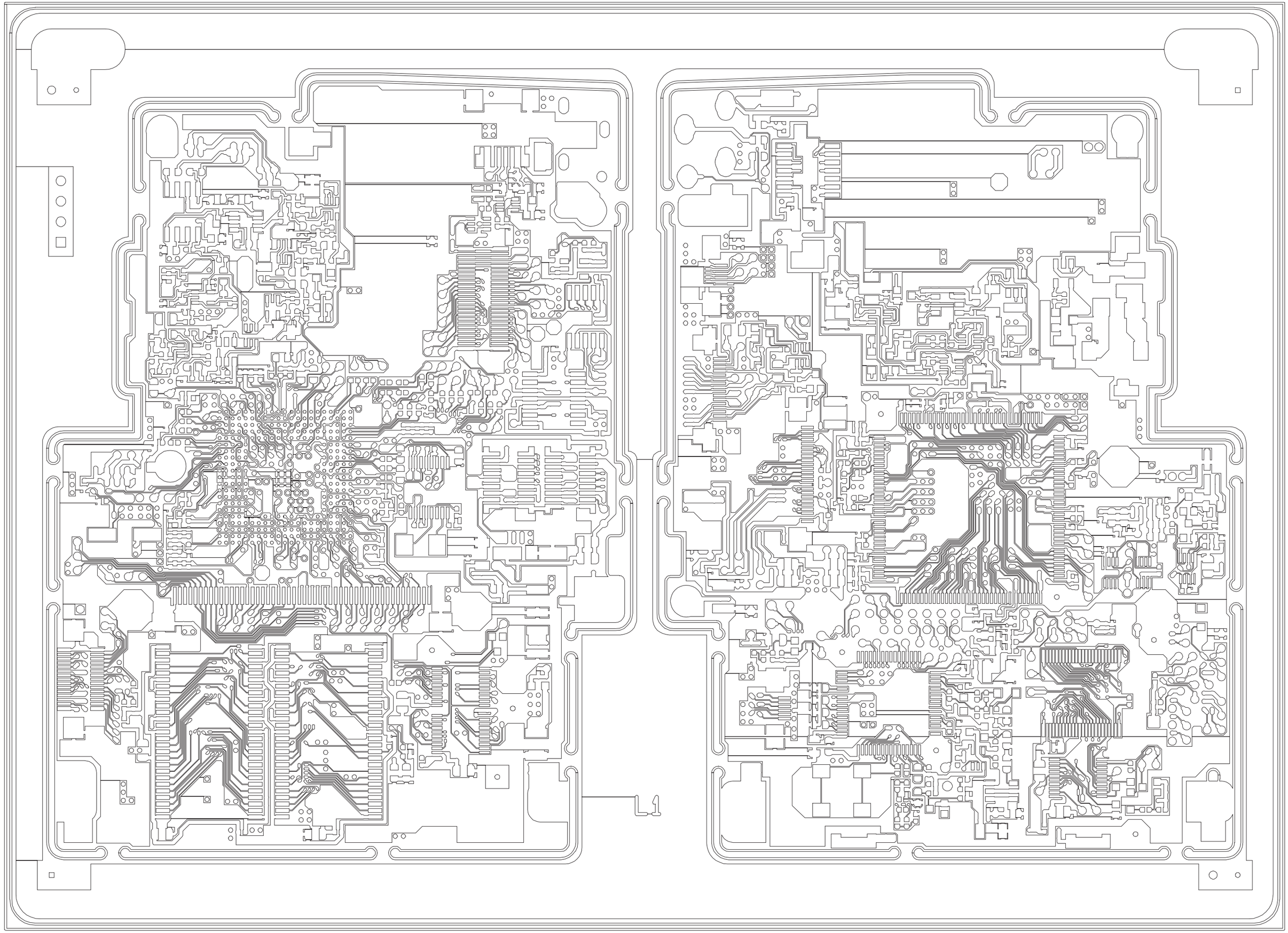

SIDE-A ... /AG4B/OD360AA
SX322-CA/
IC903
IC903
L9001

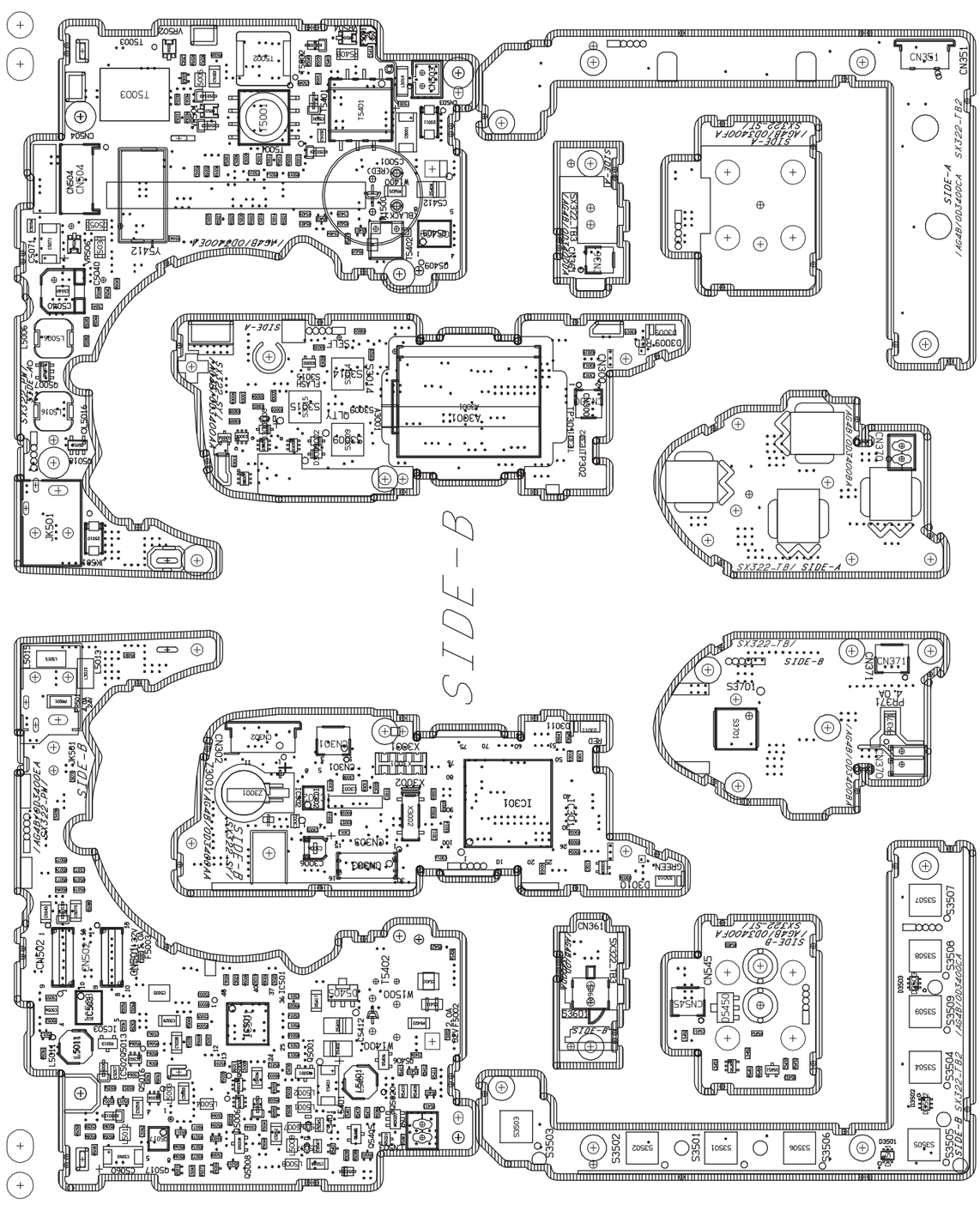
SIDE-B


/AG4B/OD360AA
SX322-CA/
IC901
IC902
IC903
IC904
IC905
CN901
CN901

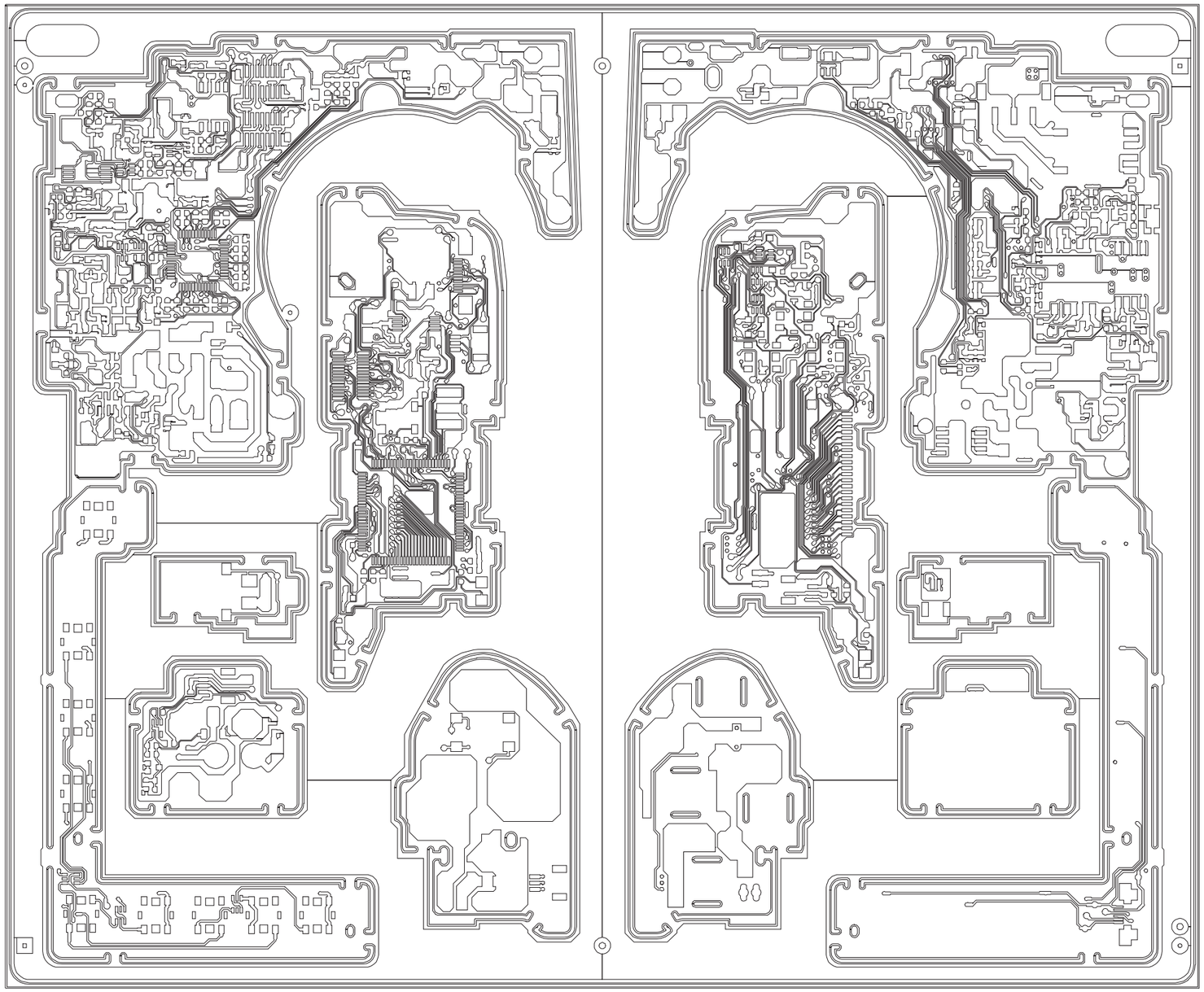



SIDE-B
/AG4B/OD3300AA
SX322-CA2-P
NTSC/PAL
IC103
IC104
IC102
IC181
IC107
IC108
IC111
IC952
IC953
IC955
IC183
IC186
IC1864
IC1865
CN101
CN104
CN106
CN107
CN108
CN110
CN111
CN116
CN141
CN144
CN171
CN181
CN182
CN951
CN952
JK112
C1513
C1778
L1702
C1902
C1901
C1903
C1739
C1519
C1717
C1777
C1512
C9509
C9505
C9512
C9520
C1603
C1111
C1103
C1108
C1602
C1601
X1101
X1701
IC1603
IC174
IC171
IC121
IC106
IC101
IC145
IC146
IC144
IC153
IC154
IC956
Q1305
Q1301
Q9501
Q9503
D1501
L1502
D1701
D1901
R1202
R1417
TP101
TP102
SEN0
TRST
GND
CPU2
CPU
TCK
TMS
RST
VDD2.5
ZERR
ZFRD
RPD
CSYN
TEMP
SIDE-B


L1


SIDE-B
SIDE-A

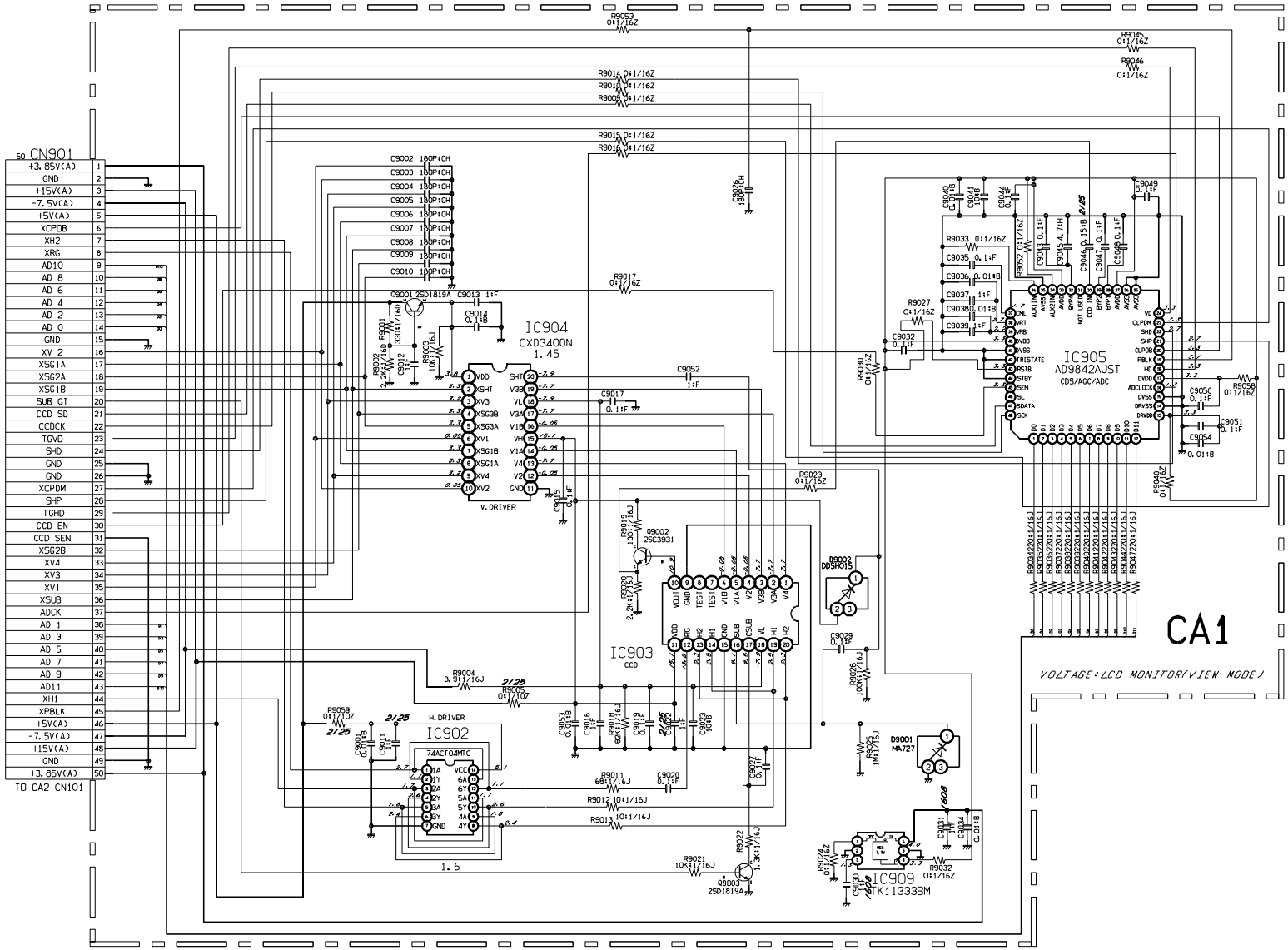
Side-B [L1]



7.3 Circuit Diagram

This section shows the following circuit diagrams for PhotoPC 3100Z.

- CA1 Circuit Diagram
- CA2 Circuit Diagram
- SY1 Circuit Diagram
- PW1 Circuit Diagram
- ST1 Circuit Diagram
- TB1 Circuit Diagram
- TB2 Circuit Diagram
- TB3 Circuit Diagram


CN901
+3.85V(A)
GND
+15V(A)
-7.5V(A)
+5V(A)
XCPDB
XH2
XRG
AD10
AD 8
AD 6
AD 4
AD 2
AD 0
GND
XV 2
XSG1A
XSG2A
XSG1B
SUB GT
CCD SD
CCDCK
TGVD
SHD
GND
GND
XCPDM
SHP
TGHD
CCD EN
CCD SEN
XSG2B
XV4
XV3
XV1
XSUB
ADCK
AD 1
AD 3
AD 5
AD 7
AD 9
AD11
XH1
XPBLK
+5V(A)
-7.5V(A)
+15V(A)
GND
+3.85V(A)
TO CA2 CN101
IC904
CXD3400N
1.45
V. DRIVER
IC903
CCD
IC902
74ACT04MTC
H. DRIVER
1.6
IC905
AD9842AJST
CDS/AGC/ADC
IC909
PK11333BM
CA1
VOLTAGE-LCD MONITOR(VIEW MODE)

CA2(MAIN)

CJ-28200/SX322-JEP

VOLTAGE-PLAY AND LCD ON

CA2(LENS)

CA2(LCD)

VOLTAGE-PLAY AND LCD ON

CPU
IC101
MB86836PMT2-G-BND

SX3U
ASIC
IC102
KS5MOU1338CBP
QXXAGMOU1338N

IC121 M29W160ET90PCV

IC103 SDRAM M2V64S40DTP-7

IC104 SDRAM M2V64S40DTP-7

IC171 LV4127W LCD DRIVER

IC951 LB1837M

IC952 LB1836M

IC953 LB1846M

CN104 TO ST1 CN545

CN107 TO PWI CN502

CN108 TO PWI CN501

CN101 TO CA1 CN901

CN141 TO COMPACT FLASH

CN171 TO LCD

CN951 TO LENS

CN952 TO LENS

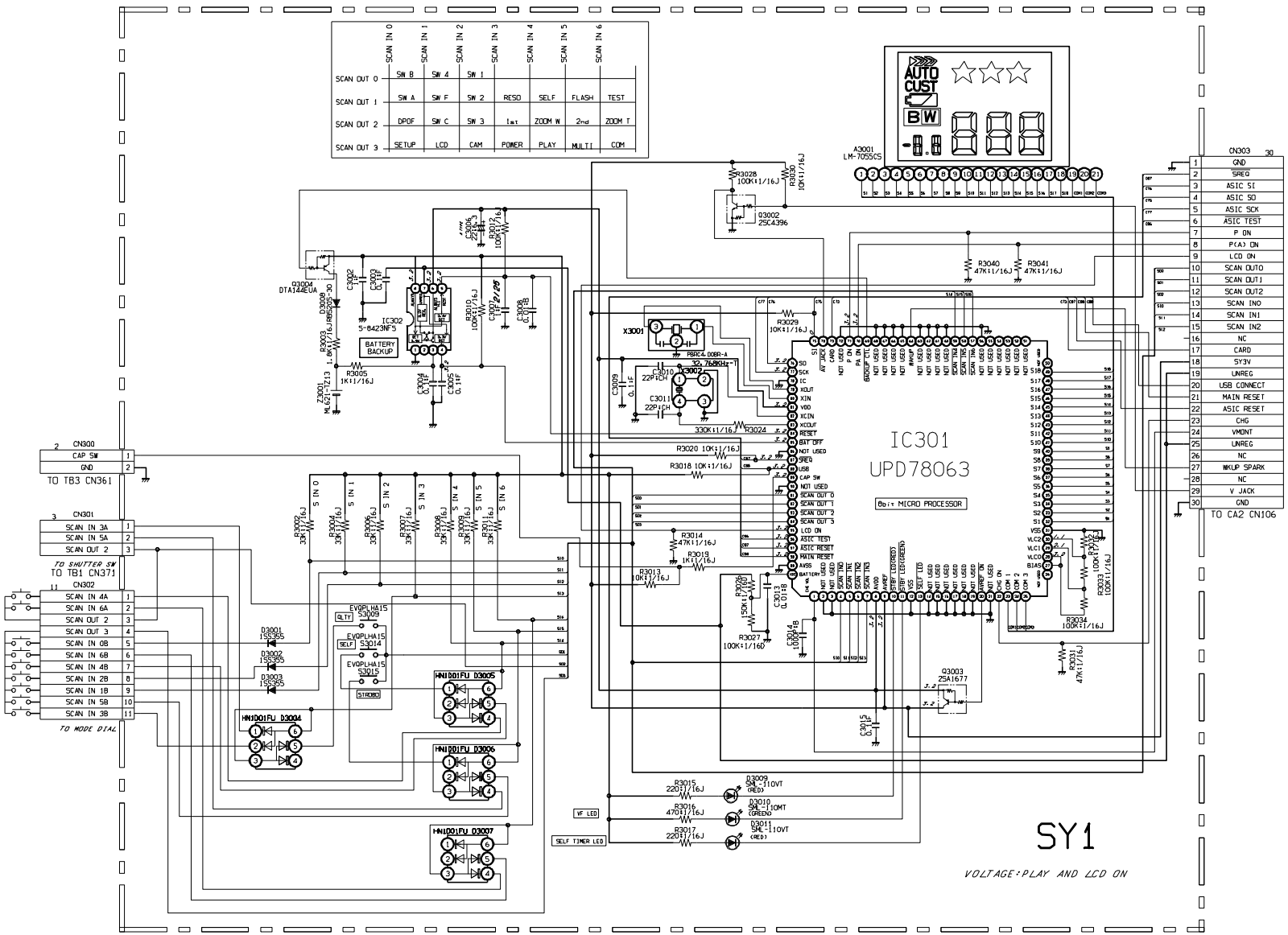
CN116 TO_IRP CN116

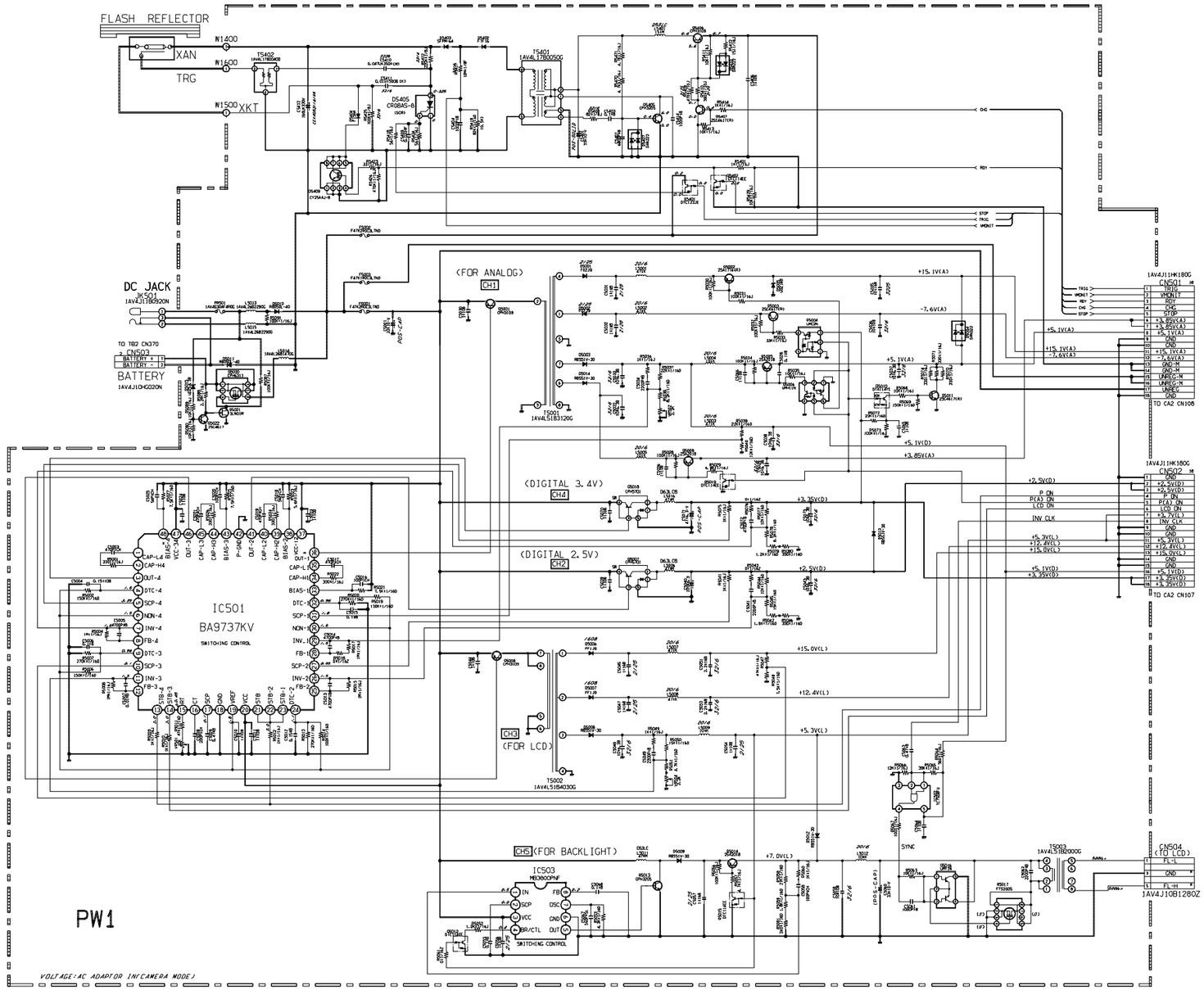
CN110 TO USB

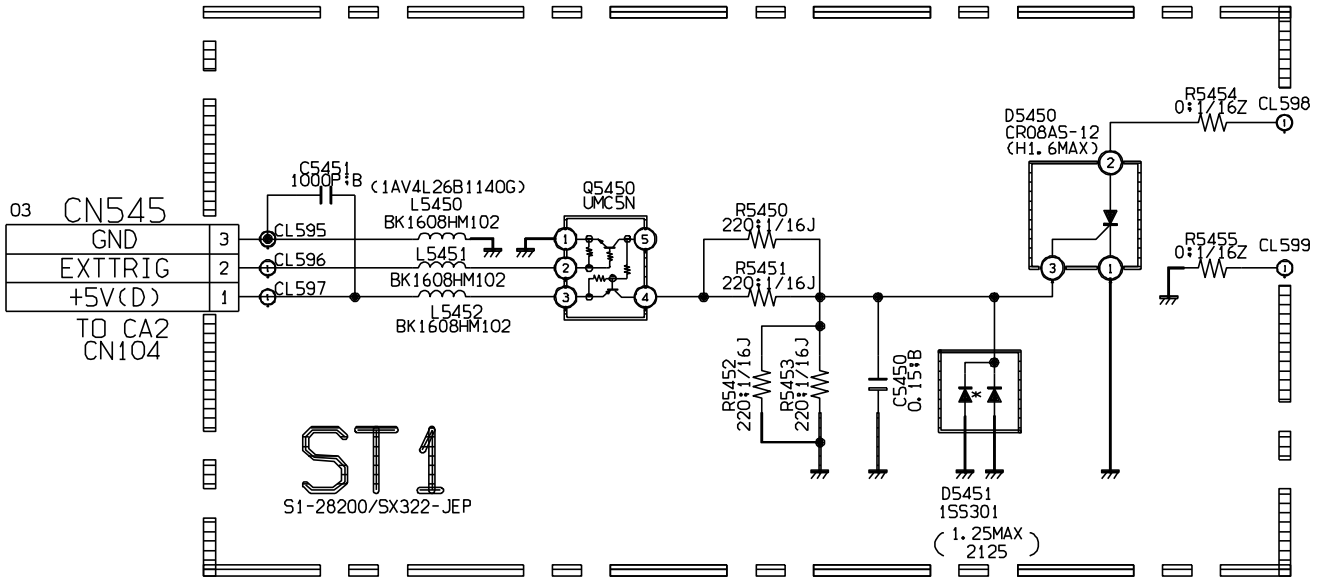
CN181 TO SPEAKER

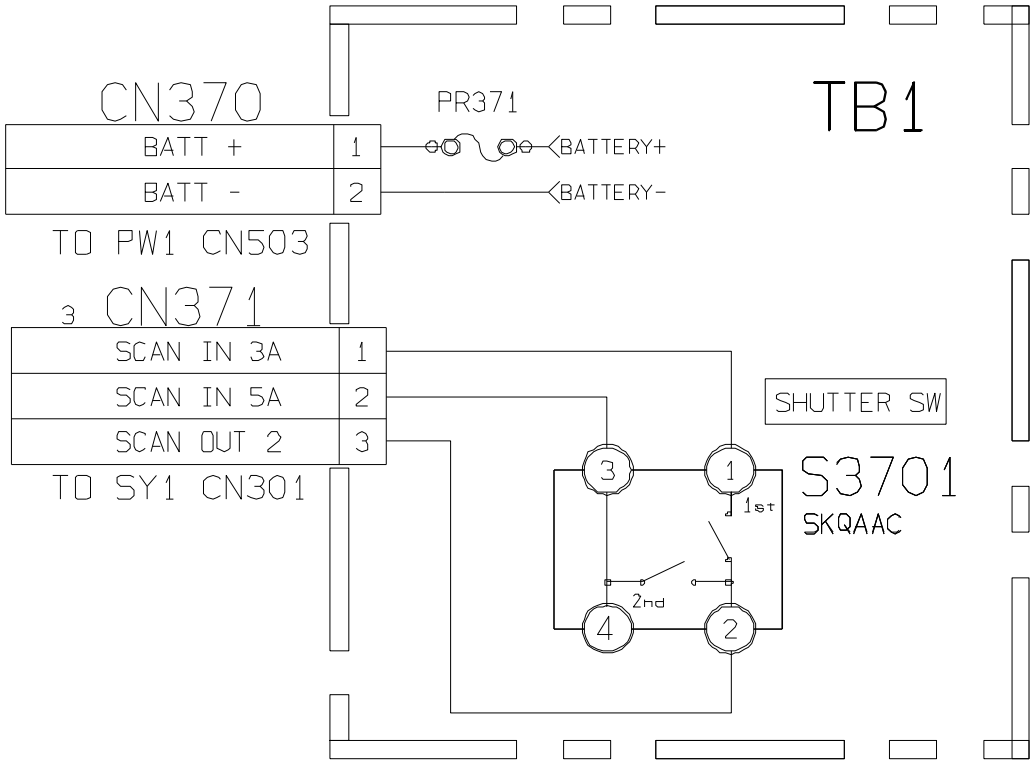
CN182 TO MICROPHONE

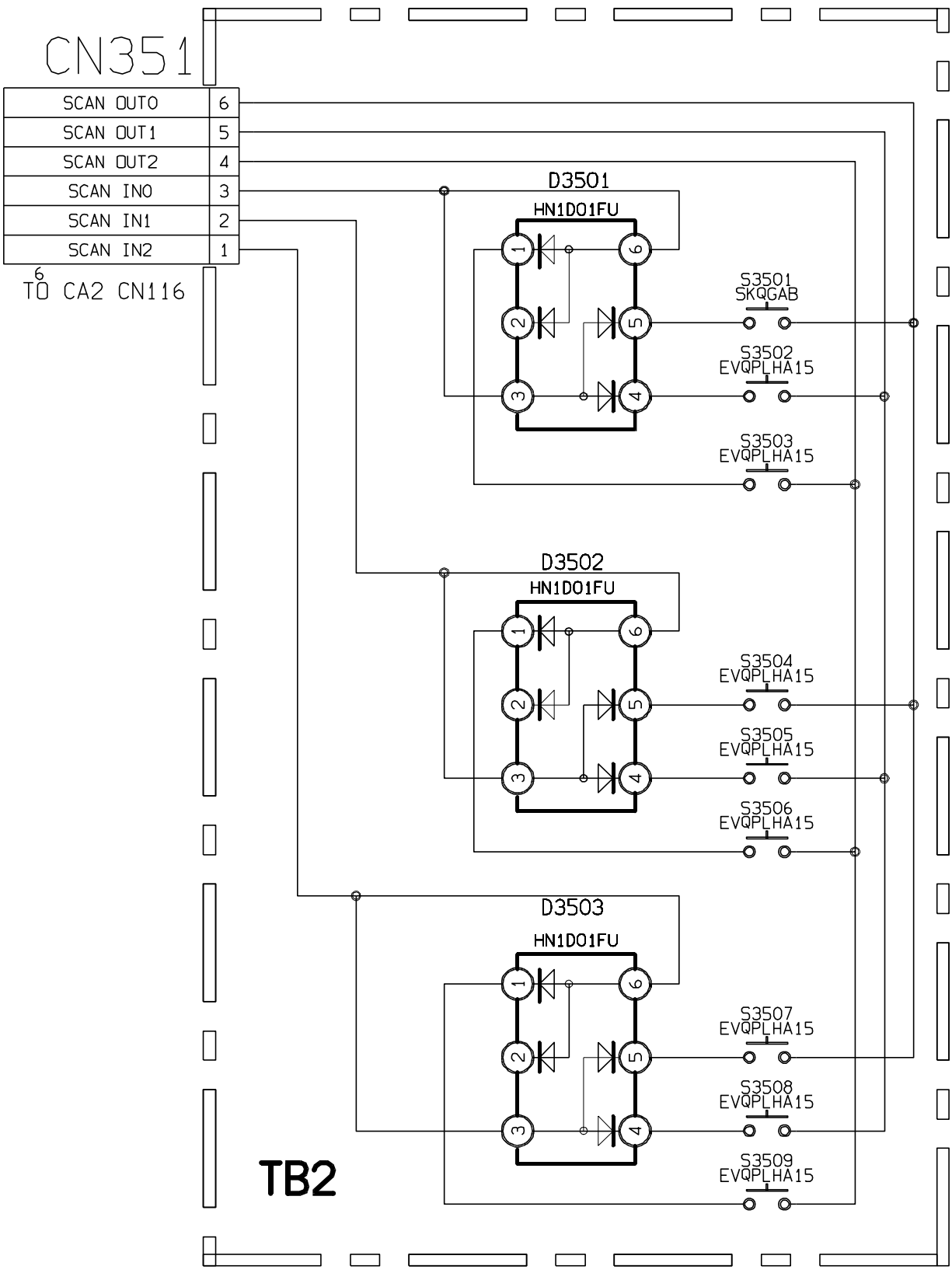
JK112 TO SY1 CN303

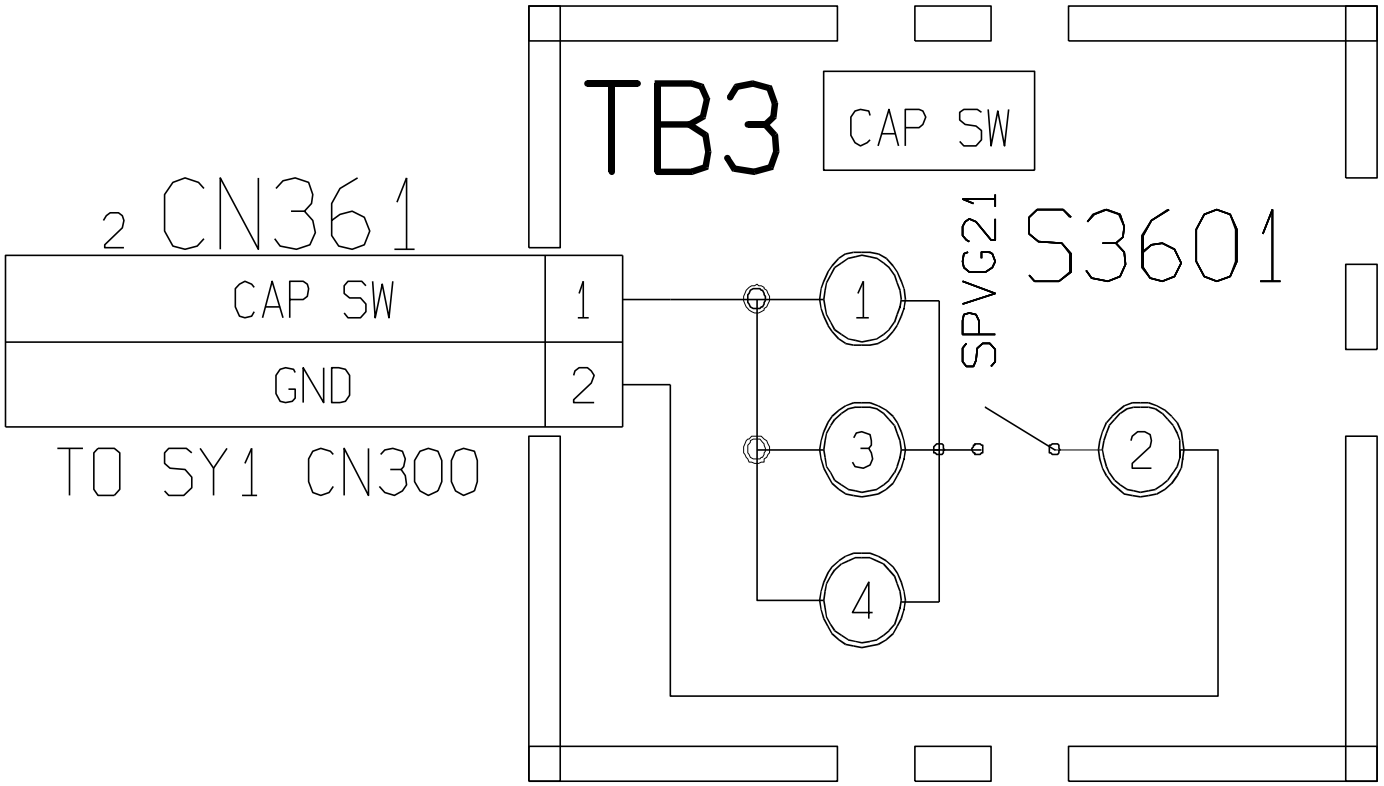

SCAN IN 0
SCAN IN 1
SCAN IN 2
SCAN IN 3
SCAN IN 4
SCAN IN 5
SCAN IN 6
SCAN OUT 0
SW B
SW 4
SW 1
SCAN OUT 1
SW A
SW F
SW 2
RESO
SELF
FLASH
TEST
SCAN OUT 2
DPOF
SW C
SW 3
1st
ZOOM W
2nd
ZOOM T
SCAN OUT 3
SETUP
LCD
CAM
POWER
PLAY
MULTI
COM
A3001
LM-7055GS
AUTO
CUST
BW
CN303
GND
SREG
ASIC SI
ASIC SO
ASIC SCK
ASIC TEST
P ON
P(A) ON
LCD ON
SCAN OUT0
SCAN OUT1
SCAN OUT2
SCAN IN0
SCAN IN1
SCAN IN2
NC
CARD
5V3V
UNREG
USB CONNECT
MAIN RESET
ASIC RESET
CHG
VMONT
UNREG
NC
WKUP SPARK
NC
V JACK
GND
TO CA2 CN106
IC301
UPD78063
8bit MICRO PROCESSOR
X3001
32.768KHz-T
R3028 100K±1/16J
R3030 10K±1/16J
Q3002 2SC4396
R3040 47K±1/16J
R3041 47K±1/16J
R3029 10K±1/16J
R3024 330K±1/16J
R3020 10K±1/16J
R3018 10K±1/16J
R3014 47K±1/16J
R3019 1K±1/16J
R3013 10K±1/16J
R3026 150K±1/16J
R3027 100K±1/16J
C3018 0.01μF
C3014 0.01μF
C3015 0.1μF
C3009 0.1μF
C3010 22pF
C3011 22pF
R3033 100K±1/16J
R3034 100K±1/16J
R3031 47K±1/16J
Q3003 2SA1677
CN300
CAP SW
GND
TO TB3 CN361
CN301
SCAN IN 3A
SCAN IN 5A
SCAN OUT 2
TO SHUTTER SW
TO TB1 CN371
CN302
SCAN IN 4A
SCAN IN 6A
SCAN OUT 2
SCAN OUT 3
SCAN IN 0B
SCAN IN 6B
SCAN IN 4B
SCAN IN 2B
SCAN IN 1B
SCAN IN 5B
SCAN IN 3B
TO MODE DIAL
S IN 0
S IN 1
S IN 2
S IN 3
S IN 4
S IN 5
S IN 6
R3000 33K±1/16J
R3004 33K±1/16J
R3006 33K±1/16J
R3007 33K±1/16J
R3008 33K±1/16J
R3017 33K±1/16J
R3021 33K±1/16J
D3001 1SS355
D3002 1SS355
D3003 1SS355
EVQPLHA15
S3009
QLTY
EVQPLHA15
S3014
SELF
EVQPLHA15
S3015
STROBO
HN1D01FU D3004
HN1D01FU D3005
HN1D01FU D3006
HN1D01FU D3007
R3015 220Ω±1/16J
R3016 470Ω±1/16J
R3017 220Ω±1/16J
D3009 SML-110VT (RED)
D3010 SML-110MT (GREEN)
D3011 SML-110VT (RED)
VF LED
SELF TIMER LED
R3004 47K±1/16J
R3005 1K±1/16J
R3003 1.8K±1/16J
D3004 DTA144EUA
D3008 1RS205-30
IC302 S-8423NFS
BATTERY BACKUP
Z3001 ML621-T213
C3004 0.1μF
C3005 0.1μF
C3002 0.1μF
C3003 0.1μF
R3010 100K±1/16J
C3007 1μF
C3008 0.1μF
R3012 100K±1/16J
C3006 0.1μF
SY1
VOLTAGE:PLAY AND LCD ON


FLASH REFLECTOR
XAN
TRG
XKT
DC JACK
BATTERY
IC501
BA9737KV
SWITCHING CONTROL
(FOR ANALOG)
CH1
(DIGITAL 3.4V)
CH4
(DIGITAL 2.5V)
CH2
CH3
(FOR LCD)
CH5
(FOR BACKLIGHT)
IC503
M63800FNF
SWITCHING CONTROL
SYNC
CN501
CN502
CN503
CN504
PW1
VOLTAGE:AC ADAPTOR IN(CAMERA MODE)


03
CN545
GND
EXTTRIG
+5V(D)
3
2
1
TO CA2
CN104
CL595
CL596
CL597
C5451
1000P:B
(1AV4L26B1140G)
L5450
BK1608HM102
L5451
BK1608HM102
L5452
BK1608HM102
Q5450
UMC5N
R5450
220:J/16J
R5451
220:J/16J
R5452
220:J/16J
R5453
220:J/16J
C5450
0.15:B
D5450
CR08AS-12
(H1.6MAX)
R5454
0:J/16Z
CL598
R5455
0:J/16Z
CL599
D5451
1SS301
(1.25MAX
2125)
ST1
S1-28200/SX322-JEP


CN370
BATT +
BATT -
1
2
PR371
BATTERY+
BATTERY-
TB1
TO PW1 CN503
3
CN371
SCAN IN 3A
SCAN IN 5A
SCAN OUT 2
1
2
3
TO SY1 CN301
SHUTTER SW
S3701
SKQAAC
1st
2nd
3
1
4
2


CN351
SCAN OUT0 6
SCAN OUT1 5
SCAN OUT2 4
SCAN IN0 3
SCAN IN1 2
SCAN IN2 1
6
TO CA2 CN116
D3501
HN1D01FU
S3501
SKQGAB
S3502
EVQPLHA15
S3503
EVQPLHA15
D3502
HN1D01FU
S3504
EVQPLHA15
S3505
EVQPLHA15
S3506
EVQPLHA15
D3503
HN1D01FU
S3507
EVQPLHA15
S3508
EVQPLHA15
S3509
EVQPLHA15
TB2

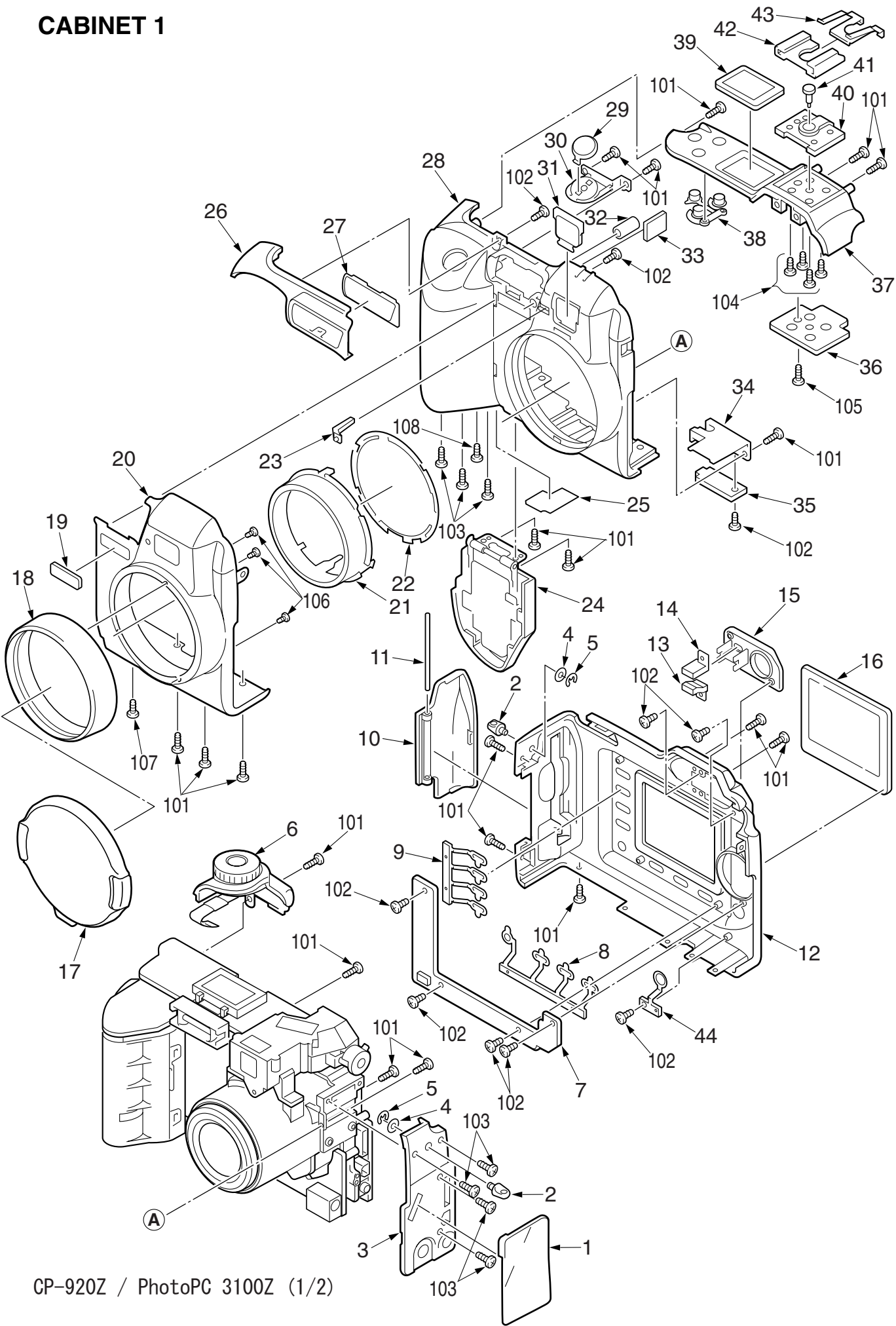

TB3
CAP SW
2 CN361
CAP SW 1
GND 2
TO SY1 CN300
SPVG21
S3601
1
3
4
2

7.4 Exploded Diagram

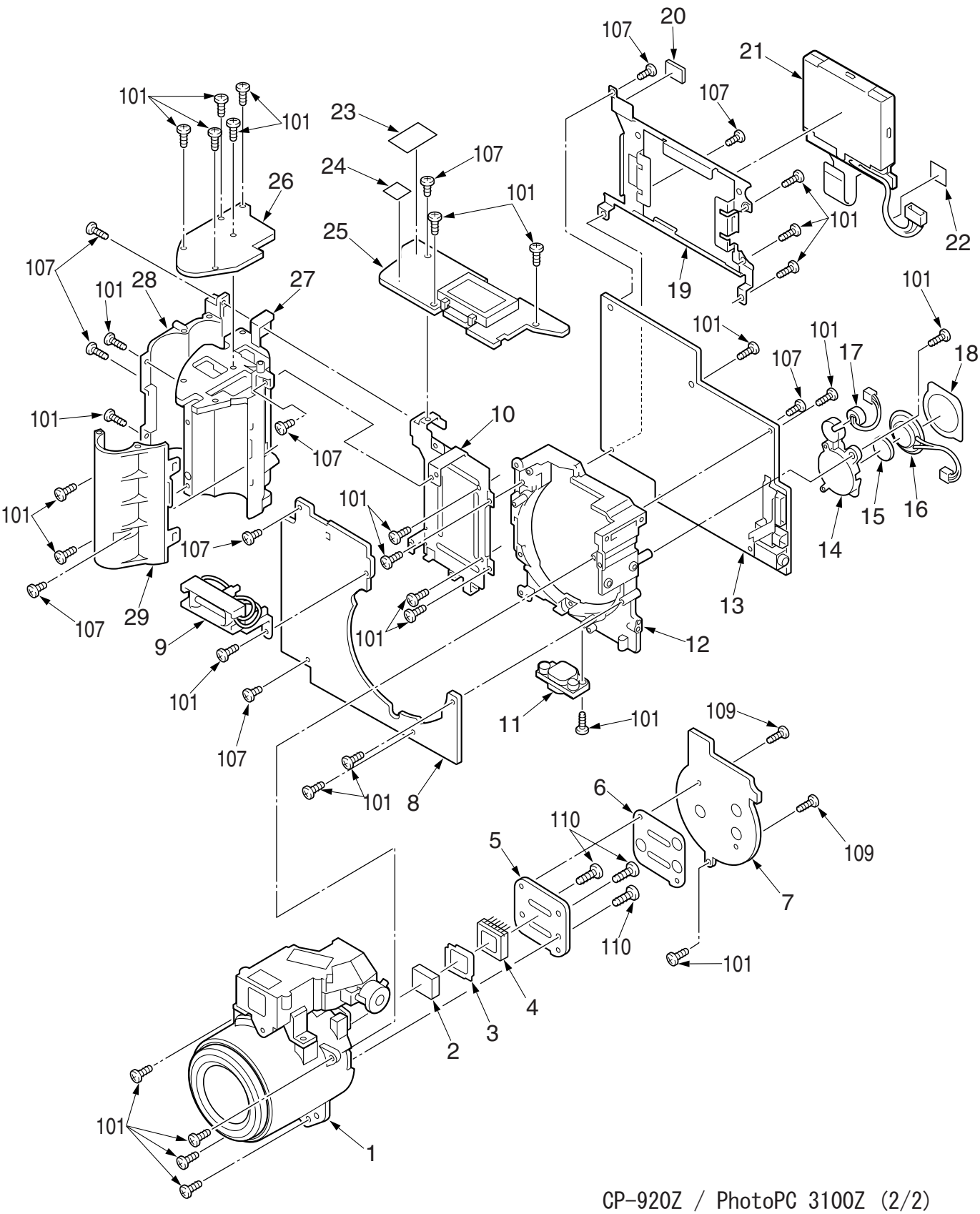
This section shows the following exploded diagrams.

- Exploded Diagram 1
- Exploded Diagram 2

CABINET 1


43
42
39
41
40
101
29
30
31
28
102
32
38
33
26
27
37
104
36
105
34
108
23
20
25
35
19
22
24
18
21
106
14
15
4
5
13
16
11
2
10
107
12
6
9
8
17
44
7
3
1
CP-920Z / PhotoPC 3100Z (1/2)

CABINET 2



CP-920Z / PhotoPC 3100Z (2/2)

7.5 ASP List

Table 7-1. ASP List

Ref No.	Description
1-1	COVER JACK-SX322/JEP
1-10	COVER CF-SX322/JEP
1-101	SCR S-TP PAN PCS1.7X5.0
1-102	SCR S-TPG PAN PCS 1.7*3
1-103	SCR S-TPG PAN PCS1.7*5
1-104	SPECIAL SCREW-2.0X4.1
1-105	SCR PAN PCS2X5
1-106	SPECIAL SCREW-1.4*2.0
1-107	SCR PAN PCS1.7X3
1-108	SCR PAN PCS1.7X4
1-11	SHAFT COVER CF-SX321/JEP
1-12	"ASSY,CABINET BACK-322/JEP"
1-13	REFRECTOR EYE B-SX321/JEP
1-14	REFLECTOR EYE A-SX321/JEP
1-15	COVER EYE-SX321/JEP
1-16	DEC MONITOR-SX321/JEP
1-17	"ASSY,CAP LENS-SX322/JEP"
1-18	RING LENS-SX322/JEP
1-19	DEC FRONT-SX322/JEP
1-2	HOLDER STRAP-SX321/JEP
1-20	COVER FRONT A-SX322/JEP
1-21	LEVER SW-SX321/JEP

Table 7-1. ASP List

Ref No.	Description
1-22	SPRING PLATE-SX321/JEP
1-23	DEC SELF-SX321/JEP
1-24	"COMPL,COVER BATT-322/JEP"
1-25	COVER FRONT B-SX322/JEP
1-26	DEC FLASH-SX322/JEP
1-27	CABINET FRONT-SX322/JEP
1-28	BUTTON SHUTTER-SX321/JEP
1-29	HOLDER TERMINAL-SX322/JEP
1-3	HINGE SHUTTER-SX321/JEP
1-31	DEC VF-SX321/JEP
1-32	TUBE STROBO-SX321/JEP
1-33	SPACER SELF-SX321/JEP
1-34	HOLDER SW-SX321/JEP
1-35	"COMPL PWB,TB-3"
1-36	"COMPL PWB,ST-1"
1-37	CABINET TOP-SX322/JEP
1-38	BUTTON TOP-SX322/JEP
1-39	DEC LCD-SX321/JEP
1-4	WASHER F 3X6X0.5
1-40	SPACER FLASH T-SR922/JEP
1-41	TERMINAL FLASH T-SR922
1-42	HOLDER FLASH T-SR922/JEP
1-43	SPRING PLATE T-SR922/JEP
1-44	BUTTON PRINT-SX322/JEP
1-5	RING E2

Table 7-1. ASP List

Ref No.	Description
1-6	"UNIT,DIAL"
1-7	"COMPL PWB,TB-2"
1-8	BUTTON BACK A-SX322/JEP
1-9	BUTTON BACK B-SX322/JEP
2-1	LENZ(ASSY)
2-10	HOLDER CHASSIS-SX321/JEP
2-101	SCR S-TP PAN PCS1.7X5.0
2-107	SCR PAN PCS1.7X4
2-109	SCR PAN PCS1.7X2.5F
2-11	STAND-SR921/JEP
2-110	SCR S-TPG PAN PCS1.7X6E
2-12	HOLDER LENZ-SX321/JEP
2-13	"COMPL PWB,CA-2"
2-14	HOLDER SPEAKER-SX321/JEP
2-15	SPACER SPEAKER B-SR922JEP
2-16	"SPEAKER,8"
2-17	MICROPHONE
2-18	SPACER SPEAKER F-SR922JEP
2-19	HOLDER MONITOR-SX321/JEP
2-2	OPTICAL FILTER
2-20	PAD(L=12)
2-21	LCD
2-22	SPACER HARNESS
2-23	SPACER UNIT
2-24	SPACER TOP-SX321/JEP

Table 7-1. ASP List

Ref No.	Description
2-25	"COMPL PWB,SY-1"
2-26	"COMPL PWB,TB-1"
2-27	HOLDER BATT.A SX321/JEP
2-28	HOLDER BATT. B SX321/JEP
2-29	HOLDER BATT. C SX321/JEP
2-3	SPACER
2-4	IC ICX252AK-B
2-5	"MOUNTING,LENS"
2-6	SPACER INSULATOR
2-7	"COMPL PWB,CA-1"
2-8	"COMPL PWB,PW-1"
2-9	"COMPL,REFLECTOR"
NON	DEC FRONT-SX322/WEP
NON	AV CABLE
NON	COMPACT FLACH CARD
NON	"SWITCH,PUSH"
NON FIG	LENS ADAPTER;900Z
NON FIG	I/F CABLE USB;920Z
NON FIG	"PAD,CAMERA;B"
NON FIG	INDIVIDUAL CARTON BOX FOR AMERICA

7.6 Siemens Star Chart

The next page is the siemens star chart used for adjustment.